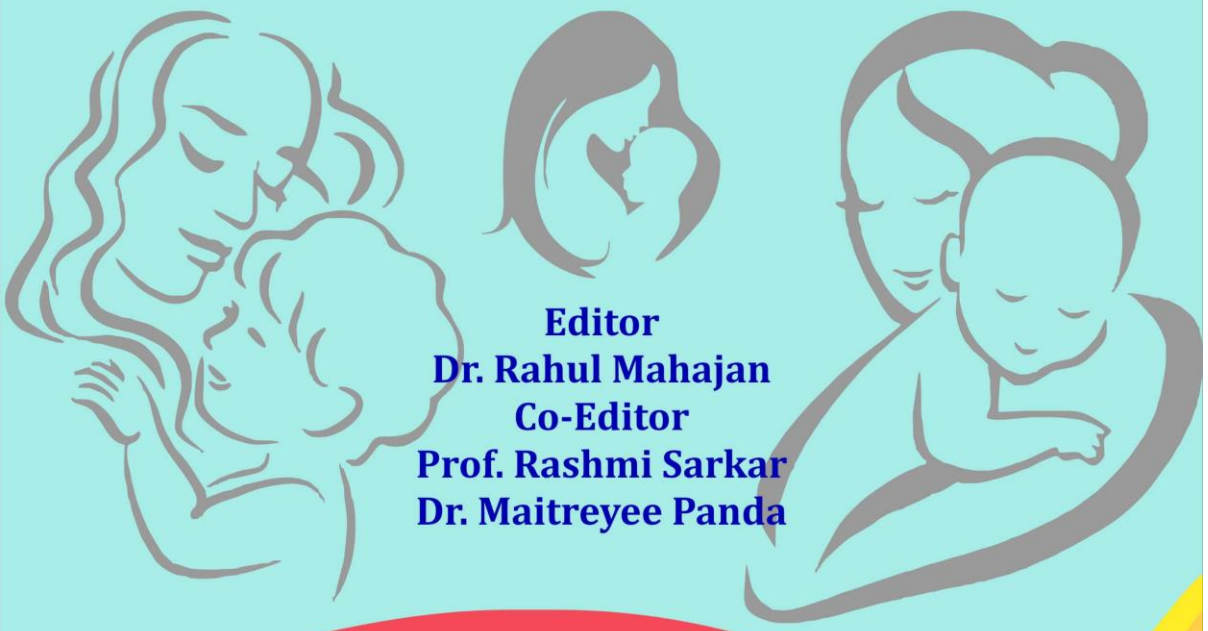
Counselling and skin care of children in health and disease - Practical parental Guide

Compiled by
Members, Special Interest Group,
Pediatric Dermatology



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IADVL EC 2022

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Message from President IADVL 2022

Dr Rashmi Sarkar, MD, FAMS

Dear IADVL Members,

This year as Presidential Projects, we have tried to take up those which are member centric with a wide reach. Pediatric Dermatology has always been an area of interest and priority for me. It gives me immense pleasure to present to you as Project Chair," **Counselling and skin care of children in health and disease --- Practical Parental Guide "** in the form of an online booklet and hardcopy subsequently. This is dedicated to our patients and your patient's parents can simply download this book or get a copy to understand simple care giving tips for their diseased children. This will be present as Patient Resource Booklet on our website and also in your clinics. The concept of this Practical Parent Guide is mine with support of IADVL EC 2022 but it is the immense hard work and timely completion of project by Dr Rahul Mahajan, SIG Coordinator, Pediatric Dermatology and Dr Maitreyee Panda, SIG Convener of same, who have also edited it. I wish to congratulate them both as well as well members of the SIG and non-members who are IADVL Members who contributed. Credit also goes to Dr Lalit Gupta, Chair IADVL Academy and Dr Rashmi Jindal, Convener, IADVL Academy for taking the project forward and timely completion. I hope all you members find it useful. Please do share feedback with us.

Long live IADVL!

Dr Rashmi Sarkar

President IADVL 2022

LM/ND/1543

Message from Honorary Secretary General IADVL 2022

It's when we start working together that the real healing takes place.

David Hume

Children are the future of our society, taking proper care of them, moulding them in the right way ensures that our society is in safe hands.

Dermatology conditions which affect the children have an impact not only on the child, it's overall development but also burden the parents, siblings and the society at large. The role of dermatologist in treating the child is important and equally important is the parental care provided by the parents or the caretakers / guardians. This education regarding the care provided at home comprises of not only to caring for skin diseases but it is also equally important that parents / caretakers are well trained to take care and maintain good skin health in a healthy child too. Hence along with therapeutic measures we should endeavour to see that adequate counselling and education on care is imparted to the parents / caretakers on care of the children both in disease and good health.

It is encouraging to know that the IADVL Academy and SIG Paediatric Dermatology has brought out this booklet on "Counselling and Skin Care of Children in Health and Disease-Practical Parental Guide". I thank the IADVL President Dr Rashmi Sarkar for envisioning the initiative and also IADVL Academy Chair Dr Lalit Gupta, IADVL Academy Convener Dr Rashmi Jindal for their sustained efforts in educating both the dermatologists and the general public. The efforts of the Editor and Co-editor of this booklet Dr Rahul Mahajan and Dr Maitreyee Panda along with all members of the SIG Paediatric Dermatology must be appreciated and applauded for the good work.

IADVL is open to your feedback and we encourage your involvement and contribution towards a brighter future for our children and society.

Long live IADVL!

Best wishes,

Dr Dinesh Kumar Devaraj, MD, FRCP

Honorary Secretary General, IADVL

Message from IADVL Academy

Pediatric dermatology is a specialized branch of dermatology that deals with not only the patient but also the parents and the care-giver. The dermatoses have a far-reaching effect on the child as well as the family affecting the overall quality of life of the whole family. Children are not small adults and thus management of their disease is quite different and needs specific training in terms of pharmacotherapy and empathy. As dermatologists we need to guide, counsel and support the parents also when dealing with pediatric cases. SIG pediatric dermatology under the able guidance of coordinator Dr Rahul Mahajan and convener Dr Maitreyee Panda have prepared a much-needed practical parental guide on counseling and skin care of children in health and disease. It will help disseminate knowledge about common pediatric dermatoses and how parents can be actively involved in management of their child's disease. We thank the National President IADVL 2022 Dr Rashmi Sarkar for her vision to develop this booklet and the Honorary secretary general Dr Dinesh Kumar Devaraj for his continuous support. Our heartfelt congratulations to the SIG pediatric dermatology for their brilliant team-work.

Dr Lalit Kumar Gupta
(Chairperson, IADVL Academy)

Dr Rashmi Jindal
(Convener, IADVL Academy)

From the Editors Desk

"Knowledge itself is power"

Sir Francis Bacon (Meditationes Sacrae, 1597)

When the parents welcome their newborn into this world, or when a child suffers from a skin disease, the anxiety of the parents heightens manifold such that they have an increasing thirst for more information on how to take care of their child in health and in disease. There are few dermatological booklets available in India that is easy to read for the general public with little medical jargon with the sole purpose of parental guidance and counselling regarding common pediatric dermatology diseases. This year symbolizes the golden jubilee year of commemoration of Central IADVL. So, on this momentous occasion, under the able leadership of our National President Dr. Rashmi Sarkar, the SIG Pediatric Dermatology team took up this noble initiative and compiled a Hand Booklet on Counselling and Skin care of Children in health and disease- "Pediatric Parental Guide".

We have tried to make the book comprehensive as well as simple and easy to understand with practical tips and advices regarding the common pediatric dermatoses which will be very helpful for each and every parent. All members of the SIG Pediatric Dermatology have brought in their vast clinical experience as well as the warmth that they all feel towards their pediatric patients to discuss a variety of real-life situations that they have encountered. At the same time, sincere efforts have been made to keep the contents of the book medically correct and uptodate.

Dr Rahul Mahajan

Editor

Coordinator, SIG Pediatric Dermatology

Dr Maitreyee Panda

Co-Editor

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Chapter 1 - Basic considerations of pediatric skin

Dr Divya Bhatia, Dr Rahul Mahajan

A bunch of young interns in their early twenties wearing white aprons entered my outpatient with confusion on their faces. To them it was just another 15 days rotation in which they visibly looked uninterested. Out of curiosity I asked them who all wanted to pursue their career in dermatology. To my surprise none of them did, and the sole reason was that it seemed too confusing and mind-numbing to them. So, in an effort to impress them and to change their opinion about my favourite field, I asked them to raise their queries and thus I tried to make them understand the basics of largest organ of the body: THE SKIN. Once they had the golden opportunity to ask questions, they were happy to ask a lot of them

1. *Ma'am, we don't understand why this organ is given a special place as a separate modality of internal medicine? Could you please elaborate about the structure of the skin?*
2. *Apart from having basic skin cells, what other specialized structures are there in skin, and what are the functions that normal human skin carries out?*
3. *How does sunrays affect the skin?*
4. *Should everyone practice sunscreen usage or just the ones having skin disorders?*
5. *Almost all lesions in the skin looks same, how do we differentiate between them?*
6. *How is pediatric skin different from adult skin?*

Ma'am, we don't understand why this organ is given a special place as a separate modality of internal medicine? Could you please elaborate about the structure of the skin?

Skin is the largest organ of the skin and is yet ignored by the general population. What seems to an unimportant organ is actually a crucial one. In a 70 kg individual, skin weighs over 5kg and has surface area of $2m^2$. It is a complex organ with many variations in its cell type, structure and thickness. Skin has a stratified, cellular epidermis and underlying dermis of connective tissue. Dermis is separated from epidermis by dermo-epidermal junction. Below dermis lies a layer of subcutaneous fat and then a vestigial layer of striated muscle. Human epidermis is composed of four layers i.e., Stratum corneum, stratum granulosum, stratum spinosum and

stratum basale. As the name describes, stratum basale is the bottom most single cell layer of keratinocytes. Basale layer gives rise to rest of the epidermis. Palms and soles have an additional thick layer that provides resilience to the skin i.e., stratum lucidum. Cells in the basal layer move upwards, differentiate, and undergo a series of changes to form rest of the epidermis. This journey of keratinocytes from basale layer to stratum corneum takes around 30 days. Basal layer is firmly attached to the basement membrane through hemidesmosomes. Cells in each layer have characteristic functions and they collectively manage complex skin structure and physiology.

Apart from having basic skin cells, what other specialized structures are there in skin, and what are the functions that normal human skin carries out?

It acts as physical barrier, permeability barrier, barrier against harmful ultraviolet rays and antimicrobial or immunological barrier. It acts as first line of defence against any external invaders. Stratum corneum is as impermeable as the whole skin, and is thus the main reason of selective permeability of the skin whereas dermis is almost completely permeable. Cells in the stratum corneum are coated with a thin layer of lipid envelope which aids in performing barrier function. Skin gives rise to various intrinsic molecules that act as natural moisturizing factors which hydrate the skin and also protects against harmful ultraviolet rays by filtering. Acid mantle in the skin has antimicrobial function and regulates SC integrity. There are a number of molecules produced by various component of skin collectively known as antimicrobial peptides that protects against various infectious agents. Skin has major role in thermoregulation. Vasoconstriction and vasodilatation of vessels in superficial or deep plexuses helps regulate blood loss. Subcutaneous fat provides cushioning effect, insulation. Nails provides cosmesis, protection and helps in performing fine functions of the skin.

Skin adnexal structures

Skin adnexae consists of pilosebaceous unit- hair follicle, arrector pili muscle and sebaceous glands; sweat glands. Each of these adnexal structures develops as a result of complex differentiation pathways and have specific functions. These exocrine

glands release their contents onto the skin surface which performs vital functions of the skin.

Types of cells in skin

Keratinocytes are the most abundant cells in the epidermis. Other cells in the epidermis is comprised of langerhans cells, melanocytes and merkel cells. Melanocytes are type of dendritic cells that produces melanin and distributes it to keratinocytes and thus provide color to the skin. Langerhans cells originate from bone marrow, are dendritic and have a key role in adaptive immune responses of the skin. Merkel cells are derived from keratinocytes and act as mechanosensory receptors of touch. Mast cells are mainly located close to blood vessels, nerves and appendages. It releases histamine and other mediators and leads to increased vascular permeability and smooth muscle contraction.

How does sunrays affect the skin?

Ultraviolet rays are very harmful to skin and is probably the most important natural environmental hazard. Based on the wavelength it has been divided into UVA, UVB and UVC. Approximately 95-98% of the rays reaching earth is UVA and only 2-5% is UVB. UVA has higher wavelength than UVB and thus penetrates deeper into the skin. UV rays causes erythema, DNA photodamage, photoageing, photocarcinogenesis, Vitamin D synthesis, oxidative damage, pigment darkening, tanning, and suppression of acquired immunity. Considering these harmful side effects of UVR everyone should use various methods of sun-protection and should use sunscreens regularly.

Should everyone practice sunscreen usage or just the ones having skin disorders?

Approximately 25% of the sun exposure occurs before 18 years of age. Awareness about sun protection among general population is minimal and the same applies to pediatric population. Thus sun-protection should be emphasized in children and adolescents. There is increased risk of skin cancers secondary to UV radiation (especially in Caucasian skin, although much less in darker skin phototype), if there is excessive sun-exposure in childhood. Infants less than 6 months of age should be

kept away from direct sunlight. Outdoor activities in children should be minimised within 10am to 4pm. Lifelong sun protection is recommended beginning at an early age. Other physical methods of sun protection than sunscreens should also be focussed on. Parents should be counselled regarding UVR effects and their protection. Wearing covered clothes, using shades in sun, wearing wide rim hats, reducing outdoor timings in mid- day sun 10am- 4pm should be advised to the parents. Sunscreens with broad spectrum of activity, less allergenic potential and photo stability are preferable.

Almost all lesions in the skin looks same, how do we differentiate between them?

It is very difficult in the initial days of medical journey to understand and differentiate different type of skin lesions. There are a myriad of skin diseases amidst a handful number of skin lesion types. Skin lesions are the gateway to the clinical diagnosis. They can be broadly divided into primary, secondary and specific skin lesions. Primary lesions are lesions with a specific morphology and confers to the basic reaction pattern. It includes macule, papule, vesicle, bullae, plaque, nodule, wheal, cyst, abscess, purpura and ecchymosis. Secondary lesions develop during the evolution of the disease process or are created as result of scratching. It includes atrophy, erosion, ulcer, scale, scar and crust. Specials lesion indicates towards a specific diagnosis. Example includes burrows in scabies, comedones in acne, milia, telangiectasias and target lesions. Based on the morphology of the lesion, site, evolution a specific diagnosis is made.

How is pediatric skin different from adults?

Skin is not completely mature and developed at birth and it undergoes a series of changes with time. Uppermost layer of the skin i.e., stratum corneum the first barrier and thus have protective functions. It is thinner and has smaller cells in pediatric skin, thus they have a weaker skin barrier. Skin turnover rate is more in pediatric patients. Water content and hydration in pediatric skin is poor thana adults, which makes their skin more prone for dryness.

Myths and facts

- Myth: Pediatric skin doesn't require special care as compared to adults.

  Fact- Pediatric skin is more sensitive and is prone for percutaneous absorption of topically applied medications and thus are at risk for systemic toxicities. As transepidermal water loss is more in children, hydration and skin barrier function is weaker than adults. Thus, pediatric patients require special attention need specific skin care methods.
- Myth: Skin diseases in children are mild and doesn't need much attention.
- Fact: Skin is the largest organ of body. It sometimes act as a window to systemic diseases. Moreover, children have more body surface area and they are more susceptible for environmental allergens and infectious agents. Thus, skin problems in children should be taken seriously and managed properly.
- Myth: If children has skin problem, he shouldn't be bathed.
- Fact: Even if children has skin condition, cleanliness and hygiene should be taken care of. Improper hygiene makes the child more prone to secondary infections and thus can exacerbate already existent skin disease.
- Myth: Child should not be sent to school or be allowed to play with other children if he/she has skin lesions

  Fact- As skin is a visible organ, any lesion is easily noticed by parents as well as teachers. There are a myriad number of disease than can affect child's skin. All of them need not be infectious in nature. Therefore he/she should be properly examined and treated by an experienced dermatologist to avoid unnecessary panic and burden to the child.
- Myth: Intake of specific food item causes skin disease

  Fact: Most of the skin diseases do not have a relation with food ingested by the child. Diseases like urticaria, atopic dermatitis might have some weak correlation with the food but they are not necessarily the cause of the disease.
- Myth: Child will also get the skin disease if any of the parents have it

  Fact: There is complex process of exchange of genetic material of both parents when a baby is born. Not all skin diseases are hereditary.

Chapter 2 - Daily skin care in healthy children in different age groups

Dr Rashmi Sarkar, Dr Apoorva Maheshwari

After a hectic work schedule, I was looking forward to the weekend where I had planned a visit to my friend's home. We were the very close friends from our school time. She was expecting her first child and was both excited and terrified at the same time. She was very happy to see me as she had always shared her joys and fears with me. But as the date of delivery was approaching, she felt a bit anxious on how she would be able to take care of the newborn. Since, I was training to be a dermatologist at the time, she greeted me with a flurry of questions

I have been reading a lot of books but I am still confused on how to take care of the skin of a child; tell me what to do?

When to give bath?

Should I use the commercially available diapers?

What moisturizers should I use?

Should I use a sunscreen from the first month?

And tell me from the moment the child is born, she added?

I was sort of ready for these questions and what followed was a lengthy reply

Skin care in a healthy child is essential to prevent diseased states. Baby up until the age of 1 month is called neonate, between 1 and 12 months is called an infant and between 12 months and 12 years is called a child. Daily skin care in a healthy neonate, infant and child are as follows:

<u>Skin care in healthy neonate and infant:</u>

✓ After the baby is born and blood has been gently removed, he/she should be placed in skin-to-skin contact with mother and covered with pre-warmed blankets.

✓ Vernix caseosa must not be forcefully removed, as it is anti-bacterial and helps in proper development of skin barrier even after birth of the baby.

✓ Skin should be evaluated for dryness, cracking and redness to ensure that the skin is healthy.

First bath should be postponed to at least 6 hours after birth, and preferably 24 hours to prevent danger of low body temperature. The child should be bathed with water at a temperature of about 35-37 degree centigrade, and the it should be checked by healthcare worker or care giver by dipping hand in it. Higher temperature may lead to skin dryness, while lower temperature may lead to risk of low body temperature. The duration of bath must not exceed 5-10 minutes, as longer baths lead to over-hydration of skin and increase the risk of being injured due to fragility. Syndet cleansers, preferably liquid formulations can be used. Soaps lead to loss of protective barrier and may even irritate the skin of the new born child. After bathing, gentle dabbing with clean cotton cloth should be done. Cloth must not be dragged to dry the skin. The child must immediately be clothed. Daily bathing is not necessary. Twice or thrice in a week is sufficient. Water bath is preferable over sponging of the baby. Shampoo, if used, should be mild, fragrance free and should not irritate the eyes. If the baby develops cradle cap, application of mineral oil for 2-3 hours followed by gentle removal of scales should be done.

✓ Super-absorbent diapers must be used to ensure adequate health of diaper area. If not available, cotton cloth can be used as substitute. Diapers must be changed frequently, in neonate preferably every 2 hours and in older infants, every 3-4 hours. For wiping the area, clean cloth or cotton ball dipped in lukewarm water should be used. Cloth must not be dragged to clean the fecal matter and should be washed in detergent and sun-dried before re-use. Neutral to mildly acidic syndet cleansing liquid can be used. If frequent change of diapers is not possible, mineral oil can be smeared in diaper area to protect from irritation from fecal matter. In absence of diaper dermatitis, no other topical product should be applied. However, preparations containing zinc oxide, dimethicone and petrolatum can be applied to

the diaper area in case of dermatitis, after consultation with pediatric dermatologist. Wet-wipes should preferably be not used.

✓ Routine use of talcum powders is not recommended to prevent accidental inhalation. If used, they must first be smeared onto the care-givers palms. Powders should not be applied to skin folds like neck and groin.

✓ Since skin barrier of newborn is not well-developed, gentle application of emollients can be done if dryness and cracking is noticed. The emollients should contain ceramides and cholesterol along with fatty acids. They should be fragrance free. Mustard oil and olive oil must not be used, as they are harmful for the baby's skin. Vegetable oils such as sunflower oil and safflower oil can be used, as they are not only moisturizing and help in improving skin barrier, but may also be reduce skin infections.

✓ Oil massages using coconut oil, sunflower oil and mineral oil are recommended. They improve temperature regulation, reduce water loss, improve blood circulation and promote weight gain. Caregiver must not have long nails or wear jewellery while massaging. It should be done in a warm room. Massage should be slow and gentle but firm enough for the baby to feel secure. An adequate massage lasts between 15-30 minutes.

✓ Sunscreens for photoprotection are not recommended below the age of 6 months. In a neonate, physical measures of photoprotection are preferable.

Skin care in healthy child

- ✓ For bathing, a gentle, neutral or mildly acidic syndet cleansing liquid can be used. Soaps can lead to dryness of skin, and are thus not preferred. After bathing, gentle cloth or towel should be used to dab the skin. Towel must not be dragged on the skin.
- ✓ Gentle application of emollients, especially immediately after the bath, should be done. If dryness and cracking is noticed, reapplication of emollients is desirable. However, excessive use must be avoided, as it may lead to painful red bumps and prickly heat, especially in summers.

- ✓ For photoprotection, broad spectrum sunscreens are advisable. The sunscreen should be non-irritant, fragrance free and of SPF 15 or more. In children, physical sunscreens containing zinc oxide or titanim oxide are preferable. The sunscreen should be applied 30 minutes before sun exposure and re-applied every 2 hours in case of swimming or excessive sweating. Other physical protection measures such as wide brimmed hats, comfortable clothing, UV protective sunglasses and UV protective umbrellas should be used. It is advisable to limit sun exposure between 10 am and 4 pm.

Chapter 3 - Birthmarks: Marks that etch the Mind

Dr Liza Mohapatra, Dr Nibedita Dixit

Mr. Arun came to the dermatology OPD with his apprehensions regarding a red spot on the cheek of his one-year-old daughter. He noticed the faint red spot at the time of the child's birth. In the following three months, he noticed increase in redness and extent of the spot proportionate to the growth of the child. He was not sure but had been told by his relatives that this was a birthmark. He was worried whether the spot will fade or become permanent, or will spread to other body parts. He had many questions at the back of his mind that he wanted to ask

1. *What Spot is this?*
2. *What are birth marks?*
3. *What causes birthmarks?*
4. *How do I identify other birthmarks?*
5. *I'm worried about its growth. Is it cancerous?*
6. *Is it related to mother's diet during pregnancy?*
7. *Is it contagious?*
8. *Does it run-in families?*
9. *When should I be concerned regarding it?*
10. *How often should I visit a doctor?*
11. *Is there any treatment for this?*
12. *Are lasers or surgical procedures better treatment for this spot?*
13. *Can we try any home-based remedies for these birthmarks?*
14. *Are there any treatment related complications?*

What Spot is this?

This is a port wine stain, a type of birthmark.

What are birth marks?

Birth marks are coloured marks on skin, present at birth or appearing shortly after birth. They can be brown, red, bluish, or light in colour. There are multiple types of birthmarks based on their colour and location on the body. These marks could persist lifelong or could regress with time. Birthmarks are mainly two types- vascular and pigmented.

Vascular birthmarks: These are marks which are mainly composed of excess or abnormal blood vessels in the skin. The three common types are:

- Salmon patches (naevus simplex)
- Port wine stains (naevus flammeus)
- Infantile haemangiomas

Pigmented Birthmarks: These are commonly known as moles. These include:

- Melanocytic nevus
- Mongolian spots
- Café-au-lait macules
- Nevus of Ota.

Nevus depigmentosus and Hypomelanosis of Ito are lighter coloured birthmarks.

What causes birthmarks?

Birthmarks mostly occur by chance and are rarely associated with other medical conditions. There is increase in number of blood vessels at the spot in case of vascular birthmarks. Port wine stains usually develop in areas lacking the small nerves that control the constriction of small blood vessels. Thus, dilated blood vessels cause a permanent blush in the affected skin. Hemangioma are formed by a group of thin-walled small blood vessels. Similarly melanocytic nevus is formed by increase in number of pigment forming cells and pigment itself.

How do I identify other birthmarks?

Any red, white, or bluish black flat or raised areas presenting at birth or within months of birth are supposed to be birthmarks.

Salmon Patch:

- It is a very common type of vascular birthmark presenting at birth, seen in around 20%-40% of neonates.
- A flat, dull red in appearance mostly localising to the eyelids, glabellar area, bridge of the nose, and on the nape of the neck (also known as 'stork bites') is the typical feature of salmon patch.
- It becomes redder when the child cries.
- Most facial lesions fade by the age of 1 year, whereas 50% of the neck lesions persist into adulthood.

Port-wine stain:

- It appears as pink or red patch usually unilateral in distribution.
- It is flat at birth and develops small nodules with increasing age.
- The commonest site is face but can involve other sites as well including mucosa.

Hemangioma:

- It is a soft dome shaped, red-colored vascular swelling on the skin, having an appearance of a strawberry.
- Majority (60%) of them present over the face and neck area.
- If the haemangioma is superficial, it will appear bright red, whereas if it is located deeper, it may appear blue in colour.

Congenital melanocytic nevus:

- Appear as dark black color flat or raised lesion.
- CMN can be classified into different types based on diameter.

Mongolian spots:

- Present as a uniform flat, blue-grey, single, or multiple patches most commonly on the lower back and buttocks.

Café au lait macules:

- Present as coffee coloured flat skin marks mostly over trunk and limbs. They may be associated with syndromes like Neurofibromatosis 1 and 2, and Tuberous sclerosis.

Nevus depigmentosus:

- Presence of light-coloured flat mark with serrated border is the typical presentation of nevus depigmentosus.
- Location can be anywhere on the body.

Nevus of Ota:

- Unilateral bluish to slate grey coloured flat hyperpigmented area on face.
- Eye involvement on the same side is also a feature. Black coloured lesions are seen on the sclera.

Hypomelanosis of Ito:

- Linearly arranged white colored flat marks on one side of body are the usual presentation of this birthmark.

I'm worried about its growth. Is it cancerous?

Rarely birthmarks are cancerous. Except few, most of them fade with increasing age. For example, port wine stains are permanent in nature enlarging in proportion as the body grows. Giant congenital melanocytic nevus (>20cm) has around 6% chances of developing malignant melanoma; hence necessitating regular supervision by a dermatologist.

Is it related to mother's diet during pregnancy?

There are so many myths regarding birthmarks. Mother's diet in pregnancy is one such myths.

- Myth: Some believe birthmarks happen due to unfulfilled wishes of the mother cravings during pregnancy.

Fact: Mother's diet has no connection or causality in development of birthmarks.

- Myth: Birthmarks are inherited from the mother.

Fact: Few birthmarks can be hereditary or familial in nature. But most of them have no hereditary link.

- Myth: Exposure to solar eclipse during pregnancy can lead to birthmarks.

Fact: There is no such connection.

- Myth: Nevus depigmentosus is often confused with leprosy and vitiligo may cause anxiety among parents.

Fact: The number of melanocytes is intact in this birthmark, only there is functional defect of the cells leading to lighter color.

Is it contagious?

Birthmarks are not contagious and doesn't spread from one person to another.

Does it run-in families?

Birthmarks usually doesn't run in families. Few birthmarks which are associated with syndromes like Neurofibromatosis can have a familial form.

When should I be concerned regarding it/ When should I visit a dermatologist?

One should be vigilant for the following warning signs:

- Any sudden increase in size of the birthmark.

- Bleeding from the red stain such as portwine stain/hemangioma.
- Signs of infection like-pain, tenderness, pus discharge, ulceration.
- Sudden appearance of raised bumpy lesions on the surface.
- Birthmarks obstructing vital organs like eyes, nose, mouth.

Port wine stain present at following sites can be a cause of concern

- Around the eye - may cause increased pressure in the eye (glaucoma). A referral to an ophthalmologist is need of the hour.
- Upper face involving forehead and eyes- with history of convulsions
    - can be linked to abnormalities within the brain (called Sturge-Weber-Syndrome). CT scan, MRI scan and EEG can aid in delineating the cerebral involvement.
- Central back overlying the spine - can cause compression of spinal cord leading to neurological deficit.
- Limb involvement with enlargement of the limb- In such cases, Klippel-Trenaunay-Syndrome must be ruled out. They also have enlarged deeper varicose-type veins. A Doppler flowmetry is done to look for venous or lymphatic involvement.

One should be more vigilant in following children with ***congenital melanocytic nevus***: multiple CMNs, giant ones, surface changes like bump like lesions with varied color changes and rapid progression need immediate attention.

Mongolian Spots: If it is persistent beyond 6 years of age and if multiple in number.

Café au lait macules: If coffee coloured skin marks are associated with raised bumpy nodules need a consultation to rule out Neurofibromatosis.

How often should I visit a doctor?

- Birthmarks with warning signs need regular 6 monthly follow up.
- Portwine stains over face, or with limb defects or with neurological symptoms like convulsions need regular follow up annually.
- CMN should be consulted and followed up regularly to see for any cancerous changes.

Is there any treatment for this?

- The transient marks fade in due course of time.
- Those birthmarks with warning signs need prompt treatment.
- Lasers can be an option for treating vascular marks. They help in decreasing the size of the birthmark. Except for port wine stains when early treatment with LASERs results in better cosmetic results, treatment is usually deferred till adolescent age.
- Cosmetic camouflage creams are often helpful.
- Melanocytic nevus can be removed surgically, if necessary, but most are best left alone. Skin graft is required for large moles.

Are lasers or surgical procedures better treatment for this spot?

Yes, lasers can be tried for birthmarks like port wine stain.

Can we try any home-based remedies for these birthmarks?

It is best to avoid any homemade remedies to prevent complications like bleeding or infection.

Chapter 4 - Infantile Hemangiomas

Angel's kiss or Devil's spell……looking beyond the Red Spots…

Dr Shazia Shah

Baby Myra's story...a baby with red spot

Tahira entered my OPD with baby Myra just ,one month old, in her lap. She seemed worried. She hurriedly removed the blanket from Myra's face and pointed to the red raised spot on her right cheek and started "doctor sahiba, my baby has this red spot which I noticed days after her birth. It was small but it is growing in size and getting redder. I could see clearly the painless red raised thing on Myra's face was 'INFANTILE HENANGIOMA"…. The commonest vacular tumour of infancy. What Followed was a series of questions from an anxious mother…..

What is it doctor? Is it some tumour? Why Myra got this, when will it stop growing?"

Why did this happen to my child?

What can I do now,is it treatable?

Will my other babies have it too?

How will your treat my child?

The concern was genuine for a mother and I had to counsel her and offer information to relieve all her anxiety, and so the discussion started.

What are infantile hemangiomas?

A 'haemangioma' (Greek for blood-vessel-growth) of Infancy is a benign (*not cancerous*) overgrowth of blood vessel cells that is self-limiting and most often appear during the first few weeks of life.

There are two common types of hemangiomas:

- *Congenital hemangiomas*, which are present from birth at their maximal size, and
- *Infantile hemangiomas*, which appear weeks after birth and increase gradually in size until they spontaneously disappear.

What causes hemangiomas of Infancy?

The cause of haemangiomas is not understood. The cells lining blood vessels (endothelial cells) start to overgrow either when the baby is still in the mother's womb or soon after birth.

Haemangiomas of infancy are more common in

- Females,
- Premature and infants with low birth-weight,
- Twin/multiple pregnancies
- Increasing age of the mother.
- Pre-eclampsia

Are haemangiomas of Infancy hereditary?

- Haemangiomas of infancy do not usually run in families, but may rarely be inherited.
- They are relatively common, affecting about 5% (1 in 20) of babies (0.1–0.28% as recorded in Indian literature.)
- IHs are usually absent at birth but appear early in life.
- They are not contagious or cancerous.

What are the types of infantile hemangioma?

Hemangiomas can look different depending on where they are in the skin.

Three main types

Superficial: Most hemangiomas appear on the skin surface and are bright red. These are called superficial infantile hemangiomas and are sometimes called "strawberry birthmarks."

Deep: Some are deep under the skin and look either blue or skin-colored; these are called deep infantile hemangiomas.

Mixed :When a deep and a superficial part are present, they are called mixed infantile hemangiomas (resembles poached egg)

Typical Course

The growth characteristics of hemangiomas are often divided into phases:

1. Proliferative growing phase.

The hemangioma begins growing rapidly at a few weeks of age (between fourand eight weeks of life), often with a period of accelerated growth, but sometimes continuing for several months of life. By 1 year of age, most hemangiomas achieve their maximum size, ranging from 2 to 20 cm (average, 2 to 5 cm).

2. *Involution Phase*
    - The growth stops and the hemangioma starts to involute.this process can take many years. Most hemangiomas have completed involution by 5-7 years of age.
    - Although superficial hemangiomas usually resolve with minimal sequalae such as atrophy, deep or mixed-type hemangiomas often show incomplete involution, with residual atrophic, wrinkled, telangiectatic, redundant skin.

Hemangiomas of the tip of the nose, lip and parotid area are particularly slow to involute

What do haemangiomas of Infancy look like?

- Most haemangiomas do not cause any symptoms, but can be alarming to parents and caretakers, especially during the phase of rapid growth.
- They appear as small red scratches or bumps.

- As they grow, they look like burgundy-coloured birthmarks
- Mostly occurs on the face, scalp, chest, neck or back
- Grow larger into a spongy mass, then gradually start to disappear.
- They resolve on their own by age 5-7, and may leave a faded, faint mark

How is a haemangioma of infancy of the skin diagnosed?

- The diagnosis can be made by the appearance of the haemangioma and the history of rapid growth followed by slow regression.
- An ultrasound or MRI may be needed if the diagnosis is not clear and to rule out associated anomalies in internal organs in a small percentage of patients.

Does my child's hemangioma need to be treated?

- Counselling and reassurance are of foremost importance to the parent/guardian by the doctor.
- Parents with a child with IH are under immense social and emotional pressure, so we have to address their genuine concern regarding its cause, effect and prognosis.
    - Benefits and indications for treatment versus waiting for natural involution
    - Outline the current and future options
    - Recommendations and referrals as appropriate
    - Information about support groups like BIRTH MARK SUPPORT GROUP

Are my future children at risk?

More research is needed to understand the risk of having a second child with a hemangioma.

How will you treat my child?

- ***Close observation without active treatment***

- Most haemangiomas will gradually shrink or even fully disappear without leaving an obvious mark.
- *Periodic visits are recommended in early infancy to be sure there are no problems developing*

Treatment will be required in the following situations:

- *Where located*

  The face, especially the central face (the eyes, nose, lips or ears)

  Beard area

  Over the lower spine

  In the diaper area, armpit or neck creases
- How many

  Multiple hemangiomas
- How big or rapidly is the hemangioma growing

  (Especially located in liver can cause heart failure)
- How likely to cause complications
  - *Ulceration*
  - *Infection*
  - **Breathing** A growth on the throat or near the larynx can block the airway and make it difficult to breathe.
  - **Vision.** Most of the time, a strawberry hemangioma near the eye is not dangerous and will not affect your baby's eyesight or the development of the eyes. But, if it does, the doctor will recommend treatment.
  - **Eating or talking.** A big hemangioma on the baby's mouth might cause an issue with eating or with speech as your child learns to talk.
  - **Elimination.** Hemangiomas in the diaper area can affect the baby's ability to move his bowels or urinate freely.
  - ***Disfigurement:*** Causing or threatening to cause disfigurement or scarring

- Associated with other Congenital Conditions like PHACES syndrome (Posterior Fossa Anomalies, Hemangioma, Arterial Anomalies, Cardiac Anomalies And Eye Anomalies

Possible treatment options

There is no algorithm to determine the most appropriate intervention for IH.Factors affecting this choice include the following:

1. Age of child – whether term/pre-term baby
2. Growth phase of IH – proliferating/involuting
3. Location and size of lesion – cosmetically/functionally important site; ≥ 5 cms in diameter
4. Degree of skin involvement – superficial/mixed/deep
5. Severity of complication and urgency of intervention – ulcerated/infected
6. Psychosocial consequences
7. Parental preference
8. Experience of treating physician

LOCALIZED TREATMENTS

- **TOPICAL BETA-BLOCKER**
    - Drugs called beta-blockers shrink blood vessels and can be used as a topical treatment or as an oral medicine
    - A topical beta blocker, such as timolol, is applied only to the hemangioma. This can help prevent growth, and sometimes shrink and fade small superficial hemangiomas.

- **TOPICAL STEROID**
    - Topical steroids can also help prevent the growth of small, thin hermangiomas. However, they aren't as frequently used as timolol (topical beta-blocker), which is usually safer option.

ORAL TREATMENTS

- **PROPRANOLOL**
    - Propranolol given by mouth is now the first choice to treat haemangiomas (USFDA approved) at important anatomical sites such as around the eyes or mouth.
    - Heart rate, and blood pressure need to be monitored during treatment.
    - Because propranolol can lower the blood sugar, it should be given during the day around feeding time and discontinued if the child is unwell (Immediately inform your treating dermatologist).
    - Common side effects include constipation, diarrhea, cold arms and legs and sleep disturbance.
    - Almost all haemangiomas respond to propranolol. Treatment usually lasts for 6 to 12 months

.

- **ORAL STEROIDS**
    - Oral steroids have been largely replaced by safer and more effective options such as propranolol.
    - Oral prednisone/prednisolone may be considered for patients with contraindications to propranolol or inadequate response to other treatments.
    - The risks of growth delay, behavioural changes, adrenal suppression, secondary infections and gastric irritation must be considered prior to starting therapy.

OTHER TREATMENTS

- **Lasers**
    - May be helpful to stop bleeding hemangiomas or to help heal ulcerated hemangiomas.
    - They may also help to remove some of the redness or residual textural change that may be left behind after the hemangioma improves.
    - The Pulsed Dye Laser is most commonly used. It produces a beam of specially formed light that reacts with the red colour in blood and penetrates to about 1.2mm into the skin.

- In adults, usually no anaesthetic is required. However, laser treatment in children, may require use of a general anaesthetic as laser treatment can be painful. After treatment, there is dark purple bruising in the treated area
- Other possible temporary side effects include blistering and crusting. Rarely, scarring may occur.

- **Surgery**
  - Surgical management is an option in cases involving severe cosmetic deformity or life-threatening complications.
  - Cover-up makeup can be useful to cover skin discolouration.
- **Management of ulcerated IH consists of**
  - Barrier dressings
  - Oral antibiotics in case of secondary infection
  - Pain control
  - Control of IH growth
  - Adjuvant Therapy
    - Topical agents including antibiotics, anaesthetics, or wound dressings and Pulsed dye Laser

Myths Vs facts about hemangiomas:

- 1Myth: Does my baby have cancer?

I often start out with each family by clearly stating the facts; "this growth is not cancer, and will not turn into cancer, it's going to grow and then improve."

- 2 Myth: A Child with Birthmarks is inauspicious.

Fact: Most individuals have birthmarks and some cultures believe that a child with a birthmark is inauspicious. Especially in our country. They are looked as harmful and regarded as devil's symbol or even a curse by God.

These are superstitions without any credence.

- 3 Myth: A Birthmark Is Caused by Expectant Mother

Fact: There is no known cause for a hemangioma, many cultures associate a birthmark with an unfulfilled desire or craving of an expectant mother.

The activities or diet of an expectant mother have nothing to do with the formation of a birthmark.

- 4 Myth: All hemangiomas are harmless.

Fact: Most of them are harmless and regress with time. However, if they are large, at functionally important areas such as eyes, nose and lips, or become life-threatening, they will require treatment.

5 Myth: Compression and massaging will help it to go away.

Fact: This will cause more harm as it may lead to bleeding and ulceration.

Vaccination:

It is recommended that children with infantile hemangiomas, are vaccinated regularly according to the standard national vaccine program recommendation.

If the child is on oral steroids with dose higher than 2mg/kg, a period of more than 14 days, live vaccines should not be administered to these children until at least one month after discontinuation of steroid therapy.

Chapter 5 - Genetic diseases of skin: they aren't manifestations of karma of previous births?

Dr Priyansh Gupta, Dr Rahul Mahajan

Story of Master Ravi

A teen-aged boy named Ravi was brought by his parents to the outpatient clinic with complains of pigmentation in network like pattern over neck and abnormal finger nails with shedding for last 1.5 years. On examination, I observed presence of whitish plaque over the lower gingiva. Ravi's father got anxious when told that he is suffering from a genetic disease dyskeratosis congenita and started asking myriad of questions –

What are genes and genetic disease?

How are genetic disease different from other non-genetic diseases?

Why one suffers from genetic diseases?

What are common genetic diseases that you see in your clinic, and how do you diagnose and treat them?

Why can I learn about these genetic diseases?

Can we diagnose the genetic diseases before the child is born?

What are the chances that off-springs of X will also suffer from similar disease?

What are the treatment options available for genetic diseases?

What are genes and genetic disease?

I calmly responded that human body is composed of trillions of cells and structure and function of these cells is determined by the information carried in the form of DNA (deoxyribonucleic acid) present in each cell. Any defect or change in the structure or arrangement of DNA leads to alteration of the information carried and hence ***disease status****. These segments of DNA which carry information related to a particular function and linked to specific diseases are known as* ***genes****. Thus,* ***genetic diseases*** *comprise of diseases or*

conditions which occur due to defect in the genes and are usually inherited but can be sporadic. They mostly manifest in the early childhood with few exceptions depending upon the nature of defect.

How are genetic disease different from other non-genetic diseases?

1. They are usually inherited meaning that they are transferred from the parents to their children.
2. There is more risk of transmission of the disease to the children and this risk depends upon the mode of inheritance (dominant or recessive)
3. Confirmatory diagnosis can be made only with genetic testing
4. There are not much treatment options available.
5. Most of the genetic dermatoses have no cure and are managed symptomatically.
6. Many genetic dermatoses but not necessarily all are associated with premature death.
7. Gene therapy has been developed for a large number of these diseases and under development for other diseases and form a promising treatment option in future.
8. Many geno-dermatoses are associated with various systemic clinical features.

What are common genetic diseases that you see in your clinic, and how do you diagnose and treat them?

Ichthyosis

Ichthyosis is term derived from Greek word 'ichthys' which means fish. This is because in these group of disorders skin develop scales which give the appearance to skin similar to the scales present on fish. It usually involves whole of the skin and if often associated with other features not necessarily limited to the skin. Some common forms of ichthyosis are ichthyosis vulgaris, recessive X-linked ichthyosis, autosomal recessive congenital ichthyosis and others. The child may manifest in various ways: dry scaly skin with or without winter exacerbation, dirty neck appearance, sparing of body/skin folds, associated thickening of skin of palms and

soles, undescended testis or other features involving brain or other organ system. There might be history of difficulty during delivery or birth in a parchment like membrane (known as collodion baby). Management of children suffering from ichthyosis group of disorders is symptomatic which aim to reduce the scaling by moisturizers and other topical or systemic medications. Avoiding bath with warm water during winters and avoiding medications or soaps which lead to exfoliation of skin is recommended. Many of the children are able to attain proper growth and carry out their normal schooling and extracurricular activities when properly managed.

Epidermolysis bullosa

Epidermolysis bullosa is another group of rare genetic diseases which affects children in early ages. Affected children develop fluid filled blisters and erosions over trauma prone sites and the severity of clinical features vary depending upon the type of gene affected. These erosions may heal with scarring with or without mutilation and may be associated with nail changes, hair loss, teeth abnormality. In severe cases, patients may get secondarily infected or may develop skin cancer. They have a dramatic impact on the patient and their family as well as economic consequences. In extreme cases, child may die due to infections or cardiac complications. Such affected children are usually managed by pediatric dermatologists. Lack of definitive treatment means counselling and symptomatic treatment remains the center of approach. Losartan, tricyclic antidepressants, gene therapy, topical diacerin and sirolimus are newer treatment options. Children are advised to avoid traumatic activities which can potentially lead to blistering as well as scarring. The type of epidermolysis bullosa is diagnosed by genetic testing which helps in the potential involvement of the children born to the affected patient and thus giving option of medical abortion in case of severe phenotypes.

Disorders with defect in DNA repair mechanism

Another group of genetic diseases are the one which involve **defect in the repair of DNA.** Examples are Xeroderma pigmentosa, Cockayne syndrome, Trichothiodystrophy, etc. The affected child may complain of sensitivity to sunlight or severe sunburns, low intelligence or other brain abnormalities including deafness, premature ageing and short stature. Children affected with xeroderma pigmentosa are more prone to development of various skin cancer. Similar to other genetic diseases there is no cure and management lies around counselling as well as symptomatic management. Strict sun-protection is advised if there is complain of photosensitivity. Retinoids are given to prevent development of skin cancer. Drugs like 5-FU and imiquimod are used for treatment of precancerous condition which develop more frequently in these patients. Prenatal diagnosis is possible and may be offered by the treating dermatologist if required.

Poikiloderma syndromes

Poikiloderma syndromes are a group of genetic syndromes characterized by presence of triad of skin atrophy, hypo- and hyperpigmentation and telangiectasia. This finding is seen in a number of geno-dermatoses like Dyskeratosis congenita, Rothmund-Thomson syndrome, Poikiloderma with neutropenia, etc. In addition to the common feature of poikiloderma the children affected by these syndromes can have nail dystrophy, leukoplakia, bone marrow failure, predisposition to malignancy, photosensitivity, palmoplantar hyperkeratosis, skin fragility, skeletal anomalies and ocular complains. Like other genetic diseases diagnosis is confirmed on genetic testing and symptomatic treatment includes protection from sunlight, stem cell transplantation in DKC, and retinoids.

Syndromes associated with premature ageing

Syndromes with **premature ageing** include Werner syndrome, Bloom syndrome, Progeria syndromes, etc. The affected individual present with variable skin features including poikiloderma, increases sensitivity to sunlight, thickening of skin, decreased fat below the skin and wrinkling and lax skin. These syndromes manifest early in the age thus aiding the diagnosis and management. Diagnosis is confirmed by various genetic tests to detect mutation of the affected gene. Protection from sunlight is an important part of management. The role of physician is limited to monitoring the progression of disease and preventing complications but also includes genetic counselling and creating awareness about the disease among parents so that proper action can be taken to prevent similar disease in the off-springs of the affected individual. Gene therapy is the definitive treatment option.

There are another group of **primary immunodeficiencies** associated with various dermatological features and deficient immunity as a result of which child is exposed to various bacterial, virological or fungal infections. These are often associated with blood cell dyscrasias including malignancy of blood cells

Why can I learn about these genetic diseases?

Awareness about these diseases is important so that one is able to suspect the disease when presented in a particular way and also to understand the fact that most of these diseases are incurable but manageable by symptomatic treatment. Indeed, the stigma they bring with them need to be tackled with the help of parents as well as the treating physician.

Can we diagnose the genetic diseases before the child is born?

Yes, there are various diagnostic tests available which can diagnose these genetic diseases before the birth of the newborn i.e., during the period of gestation. The method used for diagnosis depends upon the period of gestation as well as the cost availability. This is useful as it aids not only in prenatal counselling of the parents before the birth of the child but also gives them an option of going for medical

abortion if the mutation is associated with severe mortality. In case of less severe diseases, it is useful in preparation of the patient as well as the health resources needed to be utilized in the management of the affected child. There is slight amount of risk to the fetus associated with these tests which is important to know before opting for these tests.

Myths and facts about genetic disease

Myths : Genetic diseases do not occur without family history of genetic disease

Facts : Genetic conditions can often appear "out of nowhere"

Myths : Genetic diseases are easy to notice

Facts : Not all genetic conditions are readily visible

Myths : Genetic disease affect males and females the same

Facts : Depending upon the pattern of inheritance whether autosomal or x-linked, genetic diseases may affect one sex more than another.

Myths: All mutations are harmful

Facts: Mutation are just change in genetic code. They may be harmful, neutral or even useful.

Myths : Genes, DNA, alleles are same

Facts: They have different meanings as explained earlier

Myths: Genetic diseases occur due to karma of previous effects

Facts: As per scientific literature these diseases occur due to mutation in particular genes which can be spontaneous or induced.

Chapter 6 - Atopic Eczema In Childhood - Moisturizers Are Your Best Friends

Dr Bhumesh Kumar Katakam, Dr Asritha CVV

A cute little infant was brought to my OPD today with reddish cheeks, but the not kind parents hoped for. With much concern, her mother asked "Doctor ji, my baby was completely alright when she was born. Six months later she got these reddish lesions on her cheeks. Later she also developed oozy itchy lesions on neck, back of her knees and other folds". On asking mother revealed that she had bronchial asthma. She then raised a series of questions:

Eczema (also atopic eczema or atopic dermatitis) is a general term for types of skin inflammation?

Which doctor should I consult if I have atopic dermatitis?

Is atopic eczema contagious?

What factors can aggravate atopic dermatitis?

What are aeroallergens?

What are the first symptoms of atopic eczema?

Pruritus is the medical term for what?

How is atopic eczema diagnosed?

What are the complications of atopic dermatitis?

Is there a cure for atopic eczema?

Is coconut oil good for eczema?

What are the treatment options for my child?

Is eczema (also atopic eczema or atopic dermatitis) is a general term for different types of skin inflammation?

- The word eczema comes from the Greek word for *bubbling*.

- It is a weeping, oozing itchy eruption that has many causes, the most common being atopic eczema.
- Other causes include allergic contact dermatitis, irritant contact dermatitis, seborrheic dermatitis, stasis dermatitis, pompholyx (dyshidrotic eczema),xerosis.
- Other diseases that can present with an eczematous appearance are scabies and fungal infections.

Which doctor should I consult if I have atopic dermatitis?

- You should consult a dermatologist for your problem.

Is atopic eczema contagious?

- **No.** Atopic eczema is not contagious.
- However, if secondary infection develops due to a virus or bacteria, then this may be contagious and will require specific treatment in order to be controlled

What factors can aggravate atopic dermatitis?

- The following factors can aggravate atopic dermatitis:

- Dust and sand
- Soaps and washing powders
- Stress and emotional upsets
- Usage of skin drying cosmetics
- Extreme weather like coldness
- Scratching and Itching
- Using rough clothes or woollen dresses

What are aeroallergens?

- They are substances **found in the air**. Aeroallergens may have a role to play in the development and / or progression of atopic dermatitis.
- Some common aeroallergens include moulds, pollens, dust mites, as well as dander found in animal skin or hair.

- There is no reliable test available to determine whether a certain aeroallergen will be a contributing factor for someone with atopic dermatitis.
- If a doctor suspects an aeroallergen is aggravating the patient's symptoms, then he or she may recommend a few ways to reduce exposure to these allergens.
- An example would involve the effects of dust mites being limited through the use of encasing pillows and mattresses with specialised dust-proof covers, washing bedding in hot water on a constant basis and possibly removing any carpeting.

What are the first symptoms of atopic eczema?

- Swelling, oozing, itching and crusting are all signs of atopic eczema

Pruritus is the medical term for what?

- Pruritus (proo-RYE-tuss) is the medical term for ***itching***.
- Itching sensations are carried by peripheral sensory nerves called C fibers.
- They are the same fibers that mediate the pain sensations.

How is atopic eczema diagnosed?

- Currently, there is no single test to diagnose atopic dermatitis (eczema).
- Most of the time, a competent physician is able to diagnosis atopic eczema with great accuracy by taking a medical history and then examining the patient's skin.
- Rarely, it may be necessary to draw blood and even take a sample of the patient's skin for microscopic examination to rule out other causes of weeping, oozing dermatitis.

The skin itches. Scratching the itch is temporarily satisfying but actually leads to more itching. This describes what?

- **The itch-scratch cycle.**

- Itching usually prompts scratching, which can sometimes lead to a vicious itch-scratch cycle.
- The urge to scratch can be so intense that it is done unconsciously.
- Correct treatment will produce less itching, which can be tolerated without scratching.
- Scratching the itch probably changes the sensation to something akin to pain, which seems easier to tolerate.

What are the complications of atopic dermatitis?

- Atopic dermatitis can sometimes lead to secondary skin infections and permanent scarring.
- In addition, persistent itching leads to thickened skin (lichenification) and darker skin.

Does diet affect atopic eczema?

- Allergens can be substances from plants, animals or foods that cause the immune system to overreact, resulting in inflammation. Whether food and diet play an important role in terms of atopic dermatitis is a controversial topic.
- Some believe that breastfeeding an infant for the first four months of life has a positive impact on its health and immune system, helping to prevent allergies such as atopic dermatitis, eczema and asthma later in life, although others disagree.
- Should a parent suspect that their child may have a food allergy, then it may be helpful for them to keep track of their child's reactions to certain foods in the form of a food diary.
- If any food results in severe symptoms, then the parent should make an appointment with their doctor.
- Changes may be beneficial if the person has a specific allergy that has proven to cause a skin reaction, such as peanuts or dairy (lactose).
- Hives is a common skin reaction to food allergies.

- If any dietary changes are to be made, especially those that require restriction of a specific food group, then it is advised that the sufferer or the parents of an affected child speak to their healthcare professional first so as to ensure that no nutritional issues will arise, as they may be deprived of some vital nutrients when eliminating certain food groups.
- The link between food and eczema (i.e. food aggravating the rash) is usually only evident in infants and those who have severe eczema

Is coconut oil good for eczema?

- Some healthcare experts may recommend coconut oil as a way to ease itching and dryness associated with atopic dermatitis.
- A number of patients prefer this form of oil as it is unlikely to aggravate the rash and soothes the skin.
- It is advised to speak to their doctor about safe remedies to use at home to treat their rash or itching.
- The topical application of coconut oil is done by rubbing a teaspoon of the oil on the itchy skin rash, the same way as one would apply lotions, gently massaging the area, without irritating the rash further.
- For mild eczema, applying coconut oil twice daily is adequate.
- Those with more severe eczema can apply a coconut oil bandage. A cotton pad is dipped in a tablespoon of melted coconut oil, and placed over the affected area for roughly 15 to 20 minutes.

Is there a cure for atopic eczema?

- Atopic eczema can be managed effectively through treatment and various methods of self-care, unfortunately, there is **no cure** for the condition. Although most children will outgrow it before starting school.

Is it possible to prevent eczema?

- There is no sure-fire way to prevent eczema. Some experts believe that regular moisturisation of the skin may be some form of a preventative measure

What are the treatment options in Atopic dermatitis?

The major goal in the management is to reduce itching, inflammation and reduce episodes of flare ups. Avoiding triggers is important in managing the condition. There are various options for the management of atopic eczema.

- Emollients- Extremely helpful for AD patients. It acts by improving hydration and reducing evaporation.

- Topical corticosteroids- First line treatment modality for active treatment of the disease. Although prolonged treatment with topical corticosteroids can lead to development of side effects including skin thinning, telangiectasias, stretch marks, increased hairs at the site. Low potency topical corticosteroids should be used on areas with thin skin like face and eyelids. Topical corticosteroids should be started as soon as the first signs of flare appears.

- Topical calcineurin inhibitors- These are most commonly used adjunctive treatment modality used along with topical corticosteroids. Tacrolimus and pimecrolimus are licensed treatment options. Common side effects include burning and tingling sensation.

- Oral treatment modalities include oral corticosteroids, cyclosporine, azathioprine, mycophenolate mofetil, and methotrexate. Oral corticosteroids are only recommended for short term as on option to treat acute flares. Oral antihistamines are used as symptomatic modality to relieve itch.

- Newer and emerging modalities include topical crisaborole 2% cream, topical tofacitinib, roflumilast and difamilast.

- Biological treatments include nemolizumab, dupilumab, omalizumab.

Myths And Facts:

- Atopic dermatitis is contagious – No , it is not contagious.

- Atopic dermatitis patients should not bathe everyday – it is true that bathing makes skin dry but regular bathing with immediate moisturizer application on wet skin is helpful
- A restrictive diet helps treat Atopic dermatitis – food allergies are sometimes associated with atopic eczema , but proper testing should be done before restricting any food item.
- Atopic dermatitis only affects kids – No, it can also affect adults and the distribution and symptoms can differ from those of children.
- Atopic patients will definitely develop asthma in future – it is true that atopic patients have higher chances of developing asthma in later life but it is not always.
- Atopic eczema is best controlled by good skin care. True or False?
    - Good skin care means that the skin should be kept moist.
    - This is particularly important in children or adults who have atopic eczema.
    - After a shower or bath, before towel drying, a thin layer of an emollient (a greasy substance which water cannot penetrate) should be applied to the wet skin to inhibit the evaporation of skin moisture.
- Atopic eczema can mimic other skin diseases and infections. True or False?
    - True. Atopic eczema must be distinguished from a wide variety of other causes of weeping, oozing dermatitis.

Chapter 7 - Paediatric allergies and urticaria

"What to do and what not to do: Most parents' worry!!!!"

Dr Jigna Padiyar, Dr Nayan Patel

A worried mom of a three-year-old child came to clinic with complain of her child having excessive itching and many tiny bumps over legs and hands. The child was continuously scratching the bumps and seemed quite a bit disturbed by severe itching. Child did not have fever and swelling of lips or eyes. She had lot many questions regarding the conditions like –

- *Does my child have any sort of allergy?*
- *What causes this allergy?*
- *Will it continue throughout life?*
- *Could it be possible that he may get any other allergy in future?*
- *What precaution should we take at home?*
- *Can vaccination be given to a child with allergies?*
- *Which home remedies can be helpful?*
- *What medication can we give to have relief from itching at home?*

In general, allergies in children can present in many forms like rash, hives, tiny bumps, swelling of various body parts, eczema etc. due to a variety of causative factors. Many diseases like for example simple cough and cold can manifests in same way and it is always wise to consult your doctor to avoid misdiagnosis and mistreatment. Do not try to restrict food or any activity for kids on non-medical personal's advice.

Paediatric allergies include various diseases like urticaria and angioedema, anaphylaxis, drug allergy, sun exposure allergy, contact allergies, atopic dermatitis, food allergies, insect bite allergy etc and care depends on various causative factors.

Urticaria and/or angioedema and anaphylaxis

When to suspect?

Child develops few to many skin coloured to reddish swellings (hives/urticaria) with itching involving any body part which usually lasts for less than 24 hours. If it is associated with swelling of lips and eyes, it is known as angioedema.

What causes Urticaria and/or angioedema and anaphylaxis?

A variety of factors may contribute to development of hives/urticaria and angioedema. Most common causes for acute hives are infections, food, insect bite and drugs. Less common causative factors include temperature extremes, hereditary angioedema, or various autoimmune and inflammatory disorders in which hives can be chronically recurring. Anaphylaxis is an allergy with life threatening symptoms.

Are there any symptoms for which one should be worried?

Very rarely these features can be associated with life threatening symptoms and anaphylaxis (most severe form of acute allergy) hence, for better understanding of care, parents must be able to differentiate life threatening allergies from the others.

Life-threatening symptoms/severe symptoms:

- Shortness of breath/ breathing difficulties
- Swelling of throat or tongue
- Difficulty in speaking
- Severe coughing
- High fever, severe diarrhoea, and vomiting
- child becomes cold especially extremities
- Pale appearance
- Rapid heart beats
- Light headedness/ fainting
- Non-responsive child
- Lethargic/floppy child
- Poor feeding
- Confusion
- Loss of consciousness

Whom to consult?

Dermatologist/Paediatrician who can consult a dermatologist

DO's:

1. Introduce allergic food like peanut, egg, milk etc before your baby turns one.
2. Maintain a diary of daily food so that it can be an aid in establishing correlation between allergies and various food.
3. Always consult a doctor before introducing any unknown medication in child who have drug allergy.
4. Always carry drug card if any doctors have advised you to avoid some drugs when child have past episodes of drug allergy.
5. If child develops any life-threatening symptoms approach nearest medical facility as soon as possible.
6. Parents and all guardians must be aware of child's allergic condition and particular care needed to avoid future attacks.

Don'ts:

1. Don't self-treat.
2. Don't restrict any food without doctor's advice.
3. Don't self-introduce any medication for any future illness whenever drug is suspected as a cause of urticaria, angioedema and/or anaphylaxis.
4. Don't get self-tested for various allergies and mis-interpret the tests.

What to expect during consultation?

Your doctor may advise few blood tests to rule out alternative causes which might have cause urticaria like infection. These tests may also help to diagnose allergic reactions. If food allergy is suspected, the dermatologist may consider doing a prick test where allergens are introduced with needle prick can be advised and desensitisation can be done. In cases of drug allergy your doctor may give a list of

drugs which should be avoided in future and drug rechallenge test under supervision.

For rapid control of symptoms doctor may advise some injectable medication and then later oral medications like cetrizine. In cases of severe allergies doctor may advise hospital admission under observation.

Home care:

No time should be wasted in home care if child have any of severe symptoms as described above. Child can be given anti-itch medication and calamine lotion at home in cases when no severe symptoms, but it is always advisable to go to doctor for consultation as soon as possible. If your doctor advises for any food restriction or to avoid certain drugs, follow the instructions. Whenever child have severe allergic reactions, it is always better to avoid pets at home.

What can be done in emergency situations/anaphylaxis?

Approach nearest well equipped emergency clinic as soon as possible. Meanwhile, if epinephrine pen injector is available introduce it as advised by doctor. If not (as in India), try to secure airway by loosening tight clothes around neck and chest. Your first aid person may do some manoeuvre to improve/secure airway so, don't get scared.

Should a child with history of urticaria, angioedema or anaphylaxis be given vaccination as per schedule?

Anaphylaxis due to vaccines are very rare occurrence. However, in a child who has history of such life-threatening symptoms in past should be administered vaccination in a fully equipped facility to deal with emergency symptoms. Never ever forget to mention that your child had allergy in past.

Food allergy

Child with food allergy most commonly presents with urticaria, angioedema and anaphylaxis and instruction remains same as described in above section. As emphasised above without any specific test don't restrict any food as it may render

your child nutritionally deficient. Desensitization to various food can be done under a physician's guidance after test result.

Occasionally, food allergy can present with systemic symptoms like diarrhoea or different skin symptoms like eczema. Contact allergy to food is not very common in children and instruction for it remains same as described in contact allergy section.

Vaccination should be given in a child with food allergy albeit under expert supervision.

Drug allergy

Most common skin lesions in drug allergy are urticaria, angioedema and anaphylaxis but, it can also present as tiny rash, fluid filled blister, pigmentation, small pimple like bumps, eczema etc. General instruction for drug allergy remains same but in certain situations few drugs cannot be absolutely avoided and are introduced at doctor's discretion with all precautionary measures. Tests for drug allergy are not readily available and rechallenge is difficult hence, blanket list of possible drugs causing allergy is given to patients most of the time. Desensitisation for few drugs is done for disease. Vaccination can be safely given under supervision. Treatment of drug allergy is done by anti-itch medication like cetirizine and if required steroids and other medications.

Contact allergy

When to suspect and what causes contact allergy?

Contact allergy in children can be due to variety of things like soap, massage oil, various daily care products, metals buckles in clothes, new unwashed clothes, accessories like ornaments, food etc. Usually, rashes develop at first site of contact, but it may spread on further exposure. Contact allergy is more common in patients with atopic dermatitis and instruction for same has been described in another chapter in this book.

Whom to consult?

Dermatologist

DO's and Don'ts

1. Cold compress can be applied in case of acute eczematous allergy due to various allergens.
2. Don't apply any skin medication available at your home.
3. Don't crush tablets and apply.
4. Avoid various oil massage if you think your child is sensitive and developing rashes.
5. Avoid harsh soap in eczematous conditions.
6. Don't use new clothes unwashed.
7. Children may get allergies from pet; hence, it is to be avoided.
8. Don't keep on applying prescribed medication beyond the duration advised by doctor.
9. Regular follow up for better treatment is advisable.

What to expect during consultation?

Your doctor will try to find out allergens by questioning you on various aspect. Physician will advise you to avoid certain suspected things to which child may be allergic. Various test like patch test can be performed for diagnosis, but it is usually diagnosed by examination. You may be prescribed various creams containing steroids and moisturizers as well as oral medication for initial control of disease which may include steroids if needed.

Home care

In case of contact dermatitis due to metal or any other chemicals modification in cloth pattern can be helpful. To avoid contact with various allergens full clothes are advisable. In case of atopic tendency child may be allergic to various pollens and dust so; proper hygiene and cleanliness can be maintained. Reduce the furniture and accessories which might harbour dust for long time. If indicated mask can help to reduce exposure.

Can vaccination be given in patients of contact allergy?

Yes, it can safely be given.

Insect-bite allergy

When to suspect?

Insect bite allergy is very common in toddlers where tiny itchy bumps can be found on various parts of body which are not covered by clothes. Rarely it can also present as urticaria angioedema and anaphylaxis.

Whom to consult?

Dermatologist

DO's and Don'ts

1. For insect bite allergy child must be covered with full clothes.
2. Mosquito net during sleeping time and various vaporous anti-insect solutions can be used.
3. Apply roll-on anti-insect solutions on clothes and reapply whenever clothes are changed.
4. Cover windows with insect proof net.
5. Don't keep on applying or giving oral medication beyond prescribed duration.

What to expect during consultation?

As such no tests are needed but to find out atopic tendency few can tests may be advised. As general measures are main stay in preventive therapy they are of utmost importance and will be emphasized by treating doctor also. Child will be given some anti-itch medication and some creams. Vaccination can be safely given to child with insect bite allergy.

Myths and facts

1. There is no treatment for allergy: this is not true, there are many treatments available now to treat and control allergies.
2. Allergies are for life: this is not entirely true. Some allergies like insect bite allergy improves or disappear with increasing age. And many other allergies like food allergy and drug allergy can be improved with desensitization.

3. Peanut allergies are most severe: though most common food allergy is by pea nut, but severe reactions are very rare.
4. Short-haired cats and dogs don't trigger allergies: person with history of contact allergy and asthma will develop allergies regardless of length of hairs of pet.

Chapter 8 - Pediatric Psoriasis

Dr Maitreyee Panda, Dr Farheen Begum

An 8 year old girl was brought by her mother to my clinic with mildly itchy red raised lesions over his scalp with whitish scales for the 6 months. Her teacher had objected to her attending the class fearing that she has some contagious disease which might spread to other children. Fearing that her daughter might not be allowed to sit in the class, her mother brought her my clinic. On examination of her skin, I could appreciate that there were well defined erythematous indurated plaques with silvery white scales over the scalp. Similar lesions were present in both the knees. When I told her that the child had psoriasis which is non-contagious, her mother had mixed feelings – feelings of relief that her daughter's studies won't be interrupted but at the same time, giving me a blank look, which seemed to ask many questions like

- *What is psoriasis?*
- *How does it look like?*
- *Does psoriasis affect more than my child's skin?*
- *Does it occur in both children and adults? How is it different in children than from adults?*
- *What triggers/aggravates psoriasis?*
- *What causes this skin disease?*
- *How do you diagnose psoriasis?*
- *How do you treat psoriasis?*
- *Will it effect my child's daily activities and quality of life?*
- *What can be the potential complications/associations of psoriasis in children?*

What is Psoriasis?

- PSORIASIS is a chronic, non contagious inflammatory disease affecting different parts of body like the skin, nails and joints.
- It is comparably common in children- affecting 2% of the global population.

How does it look like?

- Well defined erythematous (red) , raised (indurated) and scaly lesions present over scalp, extensor aspect of extrimities, elbows, knees, lower back.
- Surface shows silvery white scales
- Lesions are dry and itchy- persistent scratching increases the scales and leads to pin point bleeding points over the lesion- AUSPITZ SIGN

Other Clinical Presentations

- They could be localized to a region of the body (palmoplantar psoriasis, anogenital psoriasis) or may be generalized.
- The five main types of psoriasis are plaque, guttate, inverse, pustular, and erythrodermic
- Plaque psoriasis presents as erythematous plaques with silvery scales most commonly over extensors of extremities, i.e., on the elbows, knees, scalp, and back.
    - It is the most common type of psoriasis which affects 85% to 90% of patients.
- Guttate psoriasis also known as eruptive psoriasis is commonly seen in children usually after an upper respiratory tract infection with the streptococcal organism.
    - It presents with erythematous and scaly raindrop-shaped lesions mainly over the trunk and back.
    - It is the type of psoriasis having the best prognosis
- Pustular psoriasis presents with small non-infectious (sterile) pus-filled lesions with erythema surrounding it.
    - It is of two types localized and generalized.
    - Generalized pustular psoriasis is associated with hypocalcemia and presents with sterile pustules on an erythematous plaque involving the whole body

- Erythrodermic psoriasis presents with widespread inflammation in the form of erythema and exfoliation of the skin covering more than 90% of the body area.
    - It is the result of an exacerbation of unstable plaque psoriasis, following the abrupt withdrawal of systemic steroids.
- Oral mucosa involvement- Fissured tongue , geographic tongue (benign migratory glossitis) seen.
- Nail changes-
    - pitting of the nails (pinhead-sized depressions in the nail is seen in 70% with nail psoriasis)
    - whitening of the nail
    - small areas of bleeding from capillaries under the nail
    - yellow-reddish discoloration of the nails known as the oil drop or salmon spots
    - thickening of the skin under the nail (subungual hyperkeratosis)
    - loosening and separation of the nail (onycholysis)
    - crumbling of the nail
- Sebopsoriasis – presents as red plaques with greasy scales commonly affecting areas with increased sebum production such as the scalp, forehead, nasolabial folds, sternum, and retro-auricular folds.

Does psoriasis affect more than my child's skin?

- Yes. Psoriasis is an autoimmune disease in which the immune system is not functioning correctly. Along with itchy skin plaques, the disease can also lead to joint issues, called psoriatic arthritis (PsA). If left untreated, PsA can cause swelling, stiffness, and pain in the joints. Psoriasis is also associated with other serious health problems such as diabetes, heart disease, and depression.
    - Is psoriasis curable?

    - Unfortunately, there is no cure for psoriasis. It is a chronic, life-long condition with periods of remission and flares. The good news is there are medications available to help achieve remission.
- Can my child's diet make any difference with psoriasis?
    - There is no one special diet that can cure psoriasis, but a healthy diet that is full of nutrients and fiber like fruits and vegetables and limiting high-calorie snack foods should be encouraged to avoid developing potentially associated conditions such as obesity, diabetes with psoriasis.
- Can my child play sports with this condition?
    - Yes. staying active with sports is highly encouraged for the overall wellbeing of a child with psoriasis

How is it different in children than from adults?

- The presentation of psoriasis in childhood is similar to those in adults.
- In children, Anogenital psoriasis is the most common form of psoriasis in children less than 2 years.
- Children are more likely to experience spontaneous remission.
- Children's plaque psoriasis can be smaller, thinner, and less scaly than adults.
- Psoriasis in infants commonly affects the diaper region, resulting in a wide area of erythema or salmon-colored patches or plaques .
- Scaling cannot be detected due to the local moisture from occlusion of the diaper region, making it difficult to differentiate it from other common diaper rashes.

What triggers/aggravates psoriasis?

- This could be divided into
    - INTRINSIC FACTORS-Obesity, diabetes, dyslipidemia , hypertension , mental stress
    - EXTRINSIC FACTORS -Mechanical trauma, air pollution, drugs, vaccination, infection, smoking, alcohol

- In psoriasis, skin lesions appear in the uninvolved areas after various injuries which is known as the Koebner phenomenon.
- Radiotherapy, ultraviolet (UV) B have been reported to trigger new lesions of psoriasis
- Drugs precipitating psoriasis are β-blockers, lithium, anti-malarial drugs, interferons, terbinafine, tetracycline, nonsteroidal anti-inflammatory drugs, and fibrate drugs
- Certain vaccines such as Influenza, BCG , tetanus-diphtheria, pneumococcal polysaccharide vaccination can trigger psoriasis
- Infections- Strptococcal infections (episodes of tonsillitis), staphylococcus aureus, candida albicans, Malassezia spp., HIV infection.

How do you diagnose psoriasis?

- Diagnosis is made by a dermatologist with respect to the clinical morphology and site of lesions i.e
    - well-demarcated, symmetric, and erythematous plaques with overlying silvery scales.
    - Plaques are typically located on the scalp, trunk, buttocks, and extremities but can occur anywhere on the body.
    - Patients might demonstrate nail involvement
- Skin Biopsy for Histopathology is rarely necessary but may help to differentiate psoriasis from another dermatosis if the diagnosis is not easy.
- Characteristic histopathological changes are parakeratosis, micro-abscess, the absence of granular lesions, regular elongation of ridges in the form of camel foot appearance, and spongiform pustules of Kogoj with dilated and tortuous capillaries in the dermal papilla
- Dermoscopy -new diagnostic tool that features psoriatic plaques having dotted vessels regularly distributed over a light red background and diffuse superficial white scales

- Routine blood investigations- CBC, Renal and Liver function tests to be done as well.

How to you treat psoriasis

- Based on the disease severity and extent, one may be offered topical treatment, oral medications or its combination.
    1. **Topical treatment**- corticosteroids, calcineurin inhibitors, vitamin D3 analogues(calcipotriene, calcipotriol, and calcitriol) , and keratolytics
        - Keratolytic agents (urea, salicylic acid) are used for hyperkeratotic lesions, whereas emollients are suitable for common plaque-type scaly lesions
        - In infants, emollients can be the only treatment in the absence of pruritus, notably for napkin psoriasis and guttate psoriasis.
        - Topical corticosteroids are commonly used as a first-line treatment for pediatric psoriasis with localized disease.
        - A topical high-potency steroid may be used for a short period (1week), then exchanged for moderate-to-mild–potency steroids, and application to folds, the face, and the genital area should be avoided.
        - Topical calcineurin inhibitors include tacrolimus (0.03% ointment) and pimecrolimus (1% cream)- used to reduce the use of corticosteroids in sensitive areas, such as the face, genitalia, and intertriginous areas. It can frequently cause burning and stinging sensation on application.

Other topical agents- Tazarotene (has been used in treatment of pediatric nail psoriasis), Anthralin (dithranol), Topical coal tar, Tapinarof

2. Phototherapy- patients with refractory plaque or guttate psoriasis, with diffuse body involvement. In pediatric psoriasis, excimer laser, ultraviolet-A (UVA) light with, psoralen (topical or oral) may be effective.
3. Oral Treatment- Based on the psoriasis subtype, the rate of disease progression, failure of topical therapy , the dermatologist starts oral medication with a lowest possible dose:

- Methotrexate- 0.2 to 0.7 mg/kg/week
- Cyclosporine- 1 to 5 mg/kg/d
- Acitretin- 0.1 to 1 mg/kg/d
- Fumaric acid esters- ≤720 mg/day
- Tofacitinib

4. Biologic Therapy- for serious or recalcitrant cases of plaque, pustular, and erythrodermic psoriasis, as well as those with concurrent psoriatic arthritis. They are:

- Etanercept
- Adalimumab
- Ustekinumab
- Infliximab
- Risankizumab

Will it affect my child's daily activities and quality of life?

- Children feel embarrassed, angry or depressed and become anxious about the recurring episodes, worsening of lesions and being socially rejected by their peer.
- Having a disfiguring skin disease at a young age impairs their body image.
- One of the biggest challenges for children with psoriasis is living in anticipation, anxiety, and fear of the next psoriasis flare-up
- Parents have a great role in improving the quality of life of psoriatic children. They should be taught to be open, supportive and willing to answer questions.
- Parents should enforce the importance of adherence to medications and lifestyle modifications.
- The child should be encouraged to seek support whenever needed and support should be ensured when the child seeks it.
- Empowering the children with education and support helps them to survive difficult recurrences.

What can be potential complications/associations of psoriasis in children?

- Juvenile psoriatic arthritis - most common comorbidity. It ranges from 1% to 10% of children with psoriasis with a peak age of between 9 – 12years.
- Increased risk of obesity, and other associations of obesity such as hypertension and diabetes. Hence, encourage healthy lifestyle from early childhood – Healthy diet and regular exercise

Facts about Psoriasis

- Psoriasis is not contagious
- It does not result from poor hygiene
- Only dietary modifications cannot cure psoriasis
- It can affect both children and adults
- Psoriasis is not just dry skin – it is a multifactorial disease

Chapter 9 - Alopecia Areata In Children

Dr Bhumesh Kumar Katakam, Dr Asritha CVV

A 12-year-old girl Dayita was accompanied to my outpatient clinic with sudden loss of hair over the scalp but no symptoms. Parents were extremely worried that she might lose all her hair on the scalp. After examining her, I could notice three circular patches of hair loss. These were not scarred and I could see intact hair follicle openings. I reassured the parents and Dayita that she was suffering from 'alopecia areata' but the likelihood that the hair will regrow in a few months are quite high. Still all of them together bombarded me with a bunch of questions

What Is Alopecia Areata?

What are the sites where Alopecia can occur?

How Will Alopecia Areata Affect My Daily Life?

What Is The Signal That Triggers The Disease To Start Or Stop?

Is Alopecia Areata Hereditary?

Does The Hair Ever Grow Back?

Is There A Cure For Alopecia Areata?

Are Treatments Available?

What is the psychosocial impact of alopecia areata on my child?

What Is Alopecia Areata?

- Alopecia areata is a common autoimmune disease that results in the loss of hair on the scalp and elsewhere.
- It usually starts with one or more small, round, smooth patches and occurs in males and females of all ages and races, but onset most often occurs in childhood.
- In alopecia areata, the affected hair follicles are mistakenly attacked in groups by a person's own immune system (white blood cells), resulting in the arrest of the hair growth stage.
- These affected follicles become very small, drastically slow down production, and grow no hair visible above the surface for months or years.

What are the sites where Alopecia can occur?

- The scalp is the most commonly affected area, but the beard or any hair-bearing site can be affected alone or together with the scalp.
- Some people develop only a few bare patches that regrow hair within a year. In others, extensive patchy loss occurs, and in a few, all scalp hair is lost (referred to as alopecia totalis) or, hair is lost from the entire scalp and body (referred to as alopecia universalis).
- In some people, the nails develop stippling that looks as if a pin has made rows of tiny dents. In a few, the nails are severely distorted.

How Will Alopecia Areata Affect My Daily Life?

- Alopecia areata is not medically disabling; persons with alopecia areata are usually in excellent health. But emotionally, this disease can be challenging, especially for those with extensive hair loss.
- One of the purposes of the National Alopecia Areata Foundation is to reach out to individuals and families with alopecia areata and help them live full, productive lives.
- The emotional pain of alopecia areata can be overcome with one's own inner resources, sound medical facts, and the support of others.
- Sometimes professional counseling from a psychiatrist, psychologist, or social worker is needed to develop one's self-confidence and positive self-image.

What Is The Signal That Triggers The Disease To Start Or Stop?

- Current research suggests that something "triggers" the immune system to attack healthy hair follicles.
- It isn't known what this trigger is, or whether it is initiated inside the body (from a virus or bacteria) or from outside the body (from something in your surroundings).

- Research indicates that some people have genetic markers that increase both their susceptibility to develop alopecia areata, as well as the degree of disease severity.

Is Alopecia Areata Hereditary?

- Yes, heredity plays a role. Alopecia areata is a "polygenic disease" which requires the contribution of many genes to bring about the disease, as well as a contribution from the environment.
- Scientists believe that there may be a number of genes that predispose certain people to the disease.
- It is highly unlikely that a child would inherit all of the genes needed to predispose him or her to the disease.
- In identical twins, who share all of the same genes, if one twin has the disease, there is only a 55-percent chance that the other twin will have it as well.
- This shows that other environmental factors (still being worked out) besides genetics are required to trigger the disease.

Does The Hair Ever Grow Back?

- Yes, the hair follicles remain alive and are ready to resume normal hair production whenever they receive the appropriate signal.
- In all cases, hair regrowth may occur even without treatment and even after many years.

Is There a Cure For Alopecia Areata?

- At present, there is no definitive cure for alopecia areata, although the hair may regrow by itself.
- There are various treatments which are most effective in milder cases, but none are universally effective and may need to be used for an extended period of time.

Are Treatments Available?

- There are several available treatments; choice of treatment depends mainly on a person's age and the extent of their hair loss.
- Current treatments do not turn alopecia areata off; they block the immune system attack and/or stimulate the hair follicle to produce hair again.
- Treatments may need to be continued long-term to support continued hair growth and are most effective in milder cases.
- Even if hair is regrown, there is no guarantee that it won't fall out again once treatment is stopped.

What Treatments Are Available For Alopecia Areata?

Topical steroids (lotions/sometimes injections):

- The most common treatment is the injection of cortisone into the bare skin patches. The injections are usually given by a dermatologist who uses a tiny needle to give multiple injections into the skin in and around the bare patches.
- The injections are repeated usually every 4- 6 weeks. Both the needle prick and the slight tingling are usually well tolerated and there is no discomfort after leaving the doctor's office.
- If new hair growth occurs, it is usually visible within four weeks.
- Treatment, however, does not prevent new patches from developing.
- There are few side effects from local cortisone injections. Occasionally, temporary depressions in the skin result from the local injections, but these "dells" usually fill in by themselves.

Topical Immunotherapy:

- Topical immunotherapy is used to treat extensive alopecia areata, alopecia totalis, and alopecia universalis.
- This form of treatment involves applying chemicals such as diphencyprone (DPCP), dinitrochlorobenzene (DNCB) or squaric acid dibutyl ester (SADBE) to the scalp.
- This causes an allergic rash (allergic contact dermatitis) that looks like poison oak or ivy, which alters the immune response.

- Approximately 40% of patients treated with topical immunotherapy will regrow scalp hair after about six months of treatment.
- Patients who successfully regrow scalp hair usually must continue treatment in order to maintain the regrowth.

Anthralin cream or ointment:

- Another treatment is the application of anthralin cream or ointment. Anthralin is a synthetic, tar-like substance that has been used widely for psoriasis.
- It is applied once daily and washed off after a short time, usually 30 to 60 minutes later.
- If new hair growth occurs, it is seen in 8-12 weeks.
- Anthralin can be irritating to the skin and can cause temporary, brownish discoloration of the treated skin.
- By using short treatment times, skin irritation and skin staining are reduced without decreasing effectiveness.
- Care must be taken not to get anthralin in the eyes. Hands must be washed after applying.

Minoxidil:

- Topical 5% minoxidil solution applied twice daily may grow hair in alopecia areata.
- Scalp, eyebrows, and beard hair may respond. If scalp hair regrows completely, treatment can be stopped.
- Topical minoxidil is safe, easy to use, and does not lower blood pressure in persons with normal blood pressure.
- Topical minoxidil solution on its own is not effective in treating those with extensive hair loss, but may be used in combination with other treatments.
- Oral minoxidil is another option that can be used in more severe cases, under the guidance of a physician.

JAK inhibitors (in clinical trials):

- Janus kinase (JAK) inhibitors are medications taken orally that modulate the immune system's attack on hair follicles and include tofacitinib, baricitinib, ritilecitinib and CTP-543, among others.
- JAK inhibitors are showing promise in clinical trials for alopecia areata.
- Currently JAK inhibitors, such as tofacitinib (Xeljanz), that are FDA-approved for other diseases can only be used off-label for the treatment of alopecia areata.

What is the psychosocial impact of alopecia areata on my child?

- Losing one's hair can be a devastating experience, particularly when the loss develops suddenly and is difficult to hide.
- Patients who have difficulty with the psychosocial impact of losing their hair should speak to a health care provider about their feelings.
- Providers can offer support and may recommend that a patient work with a therapist, clinical psychologist, or support group; individual and group therapy can help patients adjust and cope with hair loss, and may also provide tips on cosmetic coverings.
- In addition, patients can contact organizations such as the National Alopecia Areata Foundation (www.naaf.org) and Alopecia UK (www.alopecia.org.uk) for information on alopecia areata and support resources.

Myths And Facts:

- Regrowth of hair occurs after completely shaving head – regrowth of hair happens either on treatment or naturally
- Alopecia areata is an infection – it is an autoimmune disease and no organism is responsible for it.
- Alopecia areata is hereditary – heredity has a role but not all parents can transmit and not all parents of the child affected has alopecia.
- Alopecia areata occurs due to excessive or less oil application – it has no relation with oil application.

Chapter 10 - Pediatric Vitiligo

Dr Maitreyee Panda, Dr Farheen Begum

A 10 year old girl, Kirti came to my out-patient clinic. She was accompanied by her whole family – parents, grandparents, elder brother Biju – all wearing an immensely worrying look on their faces. While I politely asked them to take a seat, they did not want to waste any time in pleasantries; and all of them anxiously and hurriedly spoke almost simultaneously, "Doctor Mam, kindly have a quick look at these white patches on Kirti's left upper eyelid and left cheek. These are slowly increasing in size but there was no symptoms. Could these patches be of leukoderma?". Kirti's mother voice stuttered as she spoke the words "Leucoderma". As I examined the patches and confirmed the diagnosis of vitiligo /leukoderma, the parents worriedly looked at me, ready with the next set of questions.

What is Vitiligo ?

- Vitiligo is an acquired pigmentary skin disorder characterized by the absence of pigmentary cells(melanin containing cells) from the upper most layer of skin which results in whitish patches over the body. It can affect different parts of the body, scalp and hair.
- Half of the patients develop vitiligo before the age of 20 years and about 25% of them develop the disease before 8 years of age.

What are the symptoms?

- Vitiligo presents clinically with white spots (ivory-white) on the body distributed symmetrically and more obvious in people with dark skin.
- The lesions are well-demarcated, pearly white or depigmented macules and patches, oval, round, or linear-shaped, and the borders are convex.
- It ranges from the size of few millimetres to centimetres and enlarges centrifugally
- Initial lesions occur most frequently on the hands, forearms, feet, and face, favouring the areas around the mouth and eyes.
- Based on the disease location, it can be localized or generalized-
    - Localized-

        - Focal- one or more macules in a single region but not in a segmental distribution
        - Unilateral/segmental- lesions present unilaterally in a segmental pattern, stopping abruptly at the midline.
        - Mucosal - Only mucous membranes (mouth, eyes, genitalia) involved
    - Generalized
        - Vitiligo Vulgaris-the whitish patches are scattered and widely distributed over the body
        - Acrofacial Vitiligo- only face and distal extrimities involved
        - Mixed
    - Universalis- Complete or near complete loss of pigmentation
- Vitiligo vulgaris is the most common clinical type followed by focal and segmental vitiligo.
- In dark-skinned children, there can be presence of a hyperpigmented rim around the depigmented lesions (trichrome) patches
- New vitiligo lesions can develop at the site of any cutaneous injury- Koebner phenomenon.
- Koebnerization may be more frequent in childhood vitiligo because of higher mobility and playfulness in this age group and it is indicative of the disease activity.
- Significant greying of scalp hair also frequently observed.

Is the disease curable?

- There is no permanent cure but with proper treatment at the right time, the lesions could get back to its normal skin color and there is long period of remission in majority of cases .

Is vitiligo associated with any other diseases?

- Yes, vitiligo can be associated with other medical conditions including **autoimmune conditions,** with thyroid disease being the most common in 20-30 percent of vitiligo patients.
- There is a increased risk for vitiligo patients to develop autoimmune conditions such as:
    - Alopecia Areata
    - Atopic dermatitis
    - Autoimmune Thyroid disease
    - Diabetes Mellitus
    - Inflammatory Bowel Disease
    - Pernicious anemia
    - Psoriasis
    - Rheumatoid Arthritis
    - Systemic lupus erythematosus
    - Pemphigus Vulgaris

Depending on the clinical signs and symptoms, it may be important to rule out any associated conditions through relevant laboratory tests.

Can my child play sports?

- Yes, but it is advisable to play games that has a less chance of falls as trauma may lead to new lesion at the site.

How is it different in children than from adults?

- Pediatric vitiligo shows a higher incidence in females
- Segmental vitiligo more common
- There is less frequent association with other systemic autoimmune and endocrine disorders
- Childhood vitiligo is often associated with a marked psychosocial and a detrimental effect on the self-esteem of the affected child, hence an adequate treatment is very essential

What can aggravate the disease in my child?

- Physical stress such as any major illness, surgical operations or accidents
- Intercurrent infections and repeated antibiotic- intake
- Chemical factors: Thiols, Phenols, Catechols, Mercaptoamines, Quinones and their derivatives
- UV radiation and sunburns
- Malnutrition: malnutritional habits, intake of preserved, stale, junk flood
- Psycho-social insecurity/shocks

Do you need any special tests to diagnose vitiligo?

- Diagnosis of vitiligo is mostly clinical.
- In case of confusing lesions, Woods lamp could be helpful.
- Routine investigations such as a complete blood count and fasting blood sugar should be performed for all patients.
- In case of diagnostic difficulty, a skin biopsy may be taken for histopathological study which shows total absence of melanocytes in established lesions of vitiligo.
- Other associated autoimmune disorders may be ruled out in the pediatric age group.
- Screening for autoantibodies (optional)- Anti-thyroid peroxidase Ab (ATPO), Anti-thyroglobulin Ab (ATG), Total IgE, Anti-nuclear Ab (ANA) may be done depending on the clinical signs and symptoms
- Lab tests such as thyroid profile, eosinophil count, vit B12 and folic acid can be checked (optional).

How do you manage vitiligo?

- Aim of treatment when treating vitiligo are: stabilization of active disease and promotion of repigmentation
- Several treatment modalities are currently available; which can be broadly classified under medical and surgical modalities:

- Topical Therapy- mostly used in localized vitiligo and limited area involvement (<20% of body surface area)
    - Topical steroids low, mid, or high potency are often the first line of treatment, however its prolonged unchecked use can lead to epidermal atrophy, striae, telangiactesia, systemic absorption, glaucoma, tachyphylaxis, hypothalamus pituitary axis (HPA axis) suppression and growth retardation
    - Calcipotriol
    - Topical calcineurin inhibitors- tacrolimus and pimecrolimus
    - **Decapeptide-** Basic fibroblast growth factor (bFGF)-related decapeptide solution- helps in repigmentation
- Systemic Therapy-Corticosteroids (oral mini pulse with betamethasone/methylprednisolone)- given in progressive vitiligo
- Phototherapy-
    - Topical PUVA
    - Narrow Band UVB
    - Systemic PUVA (in children>12 years)
    - Phenylalanine with PUVA
    - Home-based phototherapy - reduces in number of hospital visits, and increased patient compliance.
    - Excimer laser (308nm) / Targeted Narrow band UVB phototherapy
- Surgical therapy-
    - Can be done in a stable, localized or segmental vitiligo, which is not responding to conventional therapy
    - Surgical treatments are not recommended in very young children as stable vitiligo lesions increase in size proportionately with increase in size with body growth.
    - Various methods used for surgical replenishment of melanocytes include minipunch grafts, suction blister epidermal grafts (SBEG), thin Thiersch grafts, transplantation of epidermal

cell suspension, cultured melanocyte suspension, and cultured epidermis

- Cosmetic camouflage
  - It is the concealment of the affected area by methods, which alters or obscures it.
  - Properly counselled older children can use this as an effective add-on treatment
  - An ideal camouflage must be: Color matching, opaque to conceal the affected area, water- and sweat-resistant, easy to apply and stick on for a long time, non-allergenic, easy to be removed, efficacious, and more importantly cost-effective
- Total depigmentation using Monobenzyl ether of hydroquinone reserved for those patients with stable, extensive, and non-responsive vitiligo.

Will my daughter have a normal life and a good quality of life

- Vitiligo does not cause any physical discomfort, but patients may develop inferiority complexes, fear, anxiety, depression, social communication difficulties, embarrassment, irritability and suicidal thoughts
- They may be subjected to stigmatization, nasty comments, or distress.
- Patients of vitiligo often rely heavily on support from family members to overcome these psychosocial obstacles
- Parents of children suffering from vitiligo may also experience psychological problems or social pressure.
- The child and its parents should be counselled appropriately and should be provided psychological support at each visit.
- Various forms of psychotherapy, including cognitive behavioral therapy, hypnosis has been utilized to improve the quality of life to a certain extent

Are there any complications (If the disease is left untreated)?

- Not really, but children suffering from vitiligo can experience:
  - social stigmatization, mental stress, anxiety and depression

- depigmented skin is more prone to sunburn.
- Other complications are related to medications like skin atrophy after prolonged use of topical steroids.

Are there any practical tips for managing vitiligo on a day-to-day basis?

1. Skin should be protected from the sun rays by:
    a. Wearing full covered clothes
    b. Applying a broad-spectrum sunscreen everyday
    c. Seeking shade with the help of umbrellas
2. Avoid any kind of trauma or injury to the body- as it might trigger new spots in that region.
3. If the lesion is on a visible area such as face, camouflage make up could be used to cover it up.
4. Eat a balanced nutritious diet and reduce stress levels by meditation, deep breathing.
5. Counselling or joining a support group can help in overcoming depression and self consciousness.

Myths and Facts

- Only dark skinned people can get vitiligo- It affects all races equally but is more noticeable on dark skin
- Vitiligo is related to other skin diseases such as skin cancer, leprosy, and albinism-It is an auto-immune disorder and is not associated with the above mentioned diseases
- Vitiligo can be made worse by eating certain combinations of foods- it is not affected by food choices.
- People with vitiligo also have other physical and mental disabilities- it is not related to physical or mental dysfunctionality.
- Vitiligo can be cured by rubbing a variety of oils into the skin or taking certain supplements
- Vitiligo is contagious – It is neither infective nor contagious.

VITILIGO- There is beauty in every shade.

Chapter 11 - Lichen planus in Children

Dr Sudarshan P Gaurkar

Purple pruritic papules…

Ten-year-old Sachin was brought by parents to my clinic for purple-black spots on legs and wrists. Sachin was constantly scratching over the area for 1 month. Spots were raised at some sites but were flattened over other sites. Sachin also complained of inability to eat spicy or hot food. On examination, I noticed that similar spots were also present over both buccal mucosae. Sachin was diagnosed to have lichen planus. With a concerned look on their faces, both parents asked me several questions

What is lichen planus?

What does lichen planus looks like?

What causes lichen planus?

How lichen planus is diagnosed?

What is the treatment of lichen planus?

What is the treatment of oral lichen planus?

What about Vaccination in children with lichen planus?

What is prognosis of lichen planus in children?

What is lichen planus?

Lichen planus is a skin condition that can affect different parts of your body, including the inside of your mouth. Lichen planus though very rare in children is common in Indian subcontinent.

--Lichen planus can start as early as 7 to 8 years of life.

--Lichen planus (LP) is a multifactorial, inflammatory disease of the skin, hair follicles, nails, and mucous membranes (like oral cavity and genital mucosa).

What lichen planus looks like?

- clusters of shiny, raised, purple-red blotches on your arms, legs or body (you may see fine white lines on the blotches)
- white patches on your gums, tongue or the insides of cheeks
- burning and stinging in your mouth, especially when you eat or drink
- bald patches appearing on your scalp
- sore red patches on your vulva
- rough, thinning nails with grooves on
- ring-shaped purple or white patches on penis

These are symptoms of lichen planus. You may only have 1 of these symptoms in children.

Lichen planus on your skin can be very itchy, but not always.

What causes lichen planus?

--Many factors may contribute to lichen planus

1.Family history of lichen planus

2.Viral infections like hepatitis C, herpes virus infection

3.Immunization (hepatitis B, influenza, and herpes zoster vaccine)

4. Auto-immune diseases may be associated (such as systemic lupus erythematosus, Sjogren's syndrome, dermatomyositis, vitiligo, and alopecia areata)

5. Certain drugs can cause/aggravate lichen planus like antihypertensives (captopril, enalapril, labetalol, and propranolol), diuretics (hydrochlorothiazide), antimalarials (hydroxychloroquine and quinidine) and gold salts are known to trigger LP. Drugs frequently used in children and adolescents such as griseofulvin, tetracycline,

carbamazepine, phenytoin, and nonsteroidal anti-inflammatory medications have also been occasionally implicated. Attention also needs to be paid to the presence of mercury compounds in dental amalgam leading to oral lichen planus.

How is lichen planus diagnosed?

Diagnosis of lichen planus is by clinical examination by dermatologist in majority of cases. Typical violaceus(bluish) appearance of skin patches, sites like wrist, legs, back along with involvement of nails and oral cavity points towards lichen planus.

--Sometimes your skin specialist may advise skin biopsy in which small piece of skin is taken under local anesthesia. The skin sample is examined by pathologist who can confirm the diagnosis of lichen planus.

What is the treatment of lichen planus?

After confirming the diagnosis of lichen planus dermatologist may advise you topical or oral medication.

General measures helpful in controlling lichen planus in children can be—

- Regular moisturization of skin with good quality water-based moisturizer.
- Avoiding harsh soaps and using syndet based soaps.
- Maintaining good oral hygiene with proper brushing methods twice daily.
- Using full sleeves cotton clothing.
- Using shoes and socks while playing (avoid barefoot playing).To avoid friction and trauma which can aggravate lichen planus.(koebner phenomenon).
- Using mosquito protection inside and outside of house.
- Keeping the nails trimmed to avoid scratching and secondary bacterial infection.

Topical treatments.

- Emollients , antipruritic lotions containing calamine ,camphor ,menthol for symptomatic relief.
- Topical corticosteroids of medium potency can be given for 2 to 4 months in children. Ultrapotent corticosteroids are avoided to prevent side effects of topical corticosteroids.
- Topical calcineurin inhibitors (TCIs) like tacrolimus ointment and pimecrolimus cream are alternatives to topical Corticosteroids and are safe above 2 years of age.
- Creams containing salicylic acid 6% to 12 % can be used for thick lesions or palms and sole involvement in lichen planus.

Oral treatments

Oral antihistamines -oral antihistamines like hydroxyzine, levocetirizine can be used to control itching due to lichen planus in children. Newer non sedative antihistaminic like bilastine ,fexofenadine can be used in daytime to avoid drowsiness during day time .

- Oral glucocorticosteroids-depending on severity of lichen planus your dermatologist can prescribe you oral steroids for short course (few weeks)

Long term oral steroids are avoided during growth spurts of children to prevent adverse effects including loss of height.

- Intralesional steroids are kept reserved for special circumstances.
- Retinoids

  --Oral anti-inflamatory retinoids can be used in muco-cutaneous lichen planus with good efficacy. Acitretin (<0.5–1 mg/kg/day) is safe, effective, well tolerated in children with Lichen planus and acute severe generalized or mucocutaneous LP. For dose titration according to weight, the capsule contents can be opened and dissolved in a liquid dietary medium or frozen and cut in the required fraction and dispensed in a liquid, namely honey, milk, or infant formula before administration. Treatment duration may vary

from 8 to 12 weeks. In cases of resource poor setting oral Isotretinoin can be used instead of acitretin with good efficacy.

- Other oral drugs that can be used in children are

  1.Methotrexate

  2.Cyclosporine

  3.Dapsone

  4.Apremilast

  5.Hydroxycholoroquine

  6.Azathioprine

  7.Mycofenolate mofetil

  8.Metronidazole

  9.Erythromycin

  10.Griseofulvin

  11.Pulsed itraconazole

  12.Enoxaparin

  13. Tofacitinib

  All these drugs are to be used under expert supervision with strict monitoring as they can cause serious adverse effects. Enoxaparin and tofacitinib are newer effective drugs in treatment of lichen planus but their long-term effects and side effects in children are still unknown.

Phototherapy

Apart from drugs and creams a novel light-based therapy called Narrow-band ultraviolet B phototherapy (NB-UVB) is safe and effective treatment in childhood lichen planus. It can be used particularly in acute eruptive or generalized LP or as maintenance therapy while tapering systemic drugs. Given thrice a week on non-consecutive days is a OPD based procedure can be a good option when feasible.

What is treatment of oral lichen planus in children?

Oral involvement in pediatric lichen planus is rare it usually responds to systemic medications

--anesthetic sprays or soothing gels can be used before meal.

-- high-potency topical corticosteroids in orabase can be used for application as a thin film on dried oral mucosa twice a day with the child refraining from eating, drinking, or speaking for 30 min post application.

What about Vaccination in children with lichen planus?

--Immunization of the child should preferably be updated for age before commencing immunosuppressive therapy.

--Systemic steroid dose higher than prednisolone 2 mg/kg, for a period longer than 14 days causes immunosuppression. Live vaccines should not be administered to these children until at least 1 month after steroid discontinuation.

--Live vaccinations are not contraindications with lower doses or shorter duration of oral treatment or with topical or intralesional steroid therapy.

--Live vaccines should be avoided for at least 3 months after other immunosuppressive drugs (Cyclosporin, Methotrexate, Azathioprin, and Mycofenolate mofetil) and 6 months after biologic agents.

Killed vaccines are safe but may be less efficacious. There are no specific recommendations about when to restart immunosuppressives after vaccination. However, immunosuppressive therapy initiation should be deferred for 4 weeks after live vaccine and 2 weeks after inactivated vaccines.

What is long term prognosis of lichen planus in children?

Lichen planus in children usually respond well to treatment. With treatment children will show favourable outcome in 1 to 6 months. Residual post inflammatory hyperpigmentation may remain for years together even after

successful treatment. Nail and hair involvement in children may require longer duration of treatment than skin lesions.

Myths and Facts:

Myth 1: Lichen planus can only affect in adults, children are not at the risk of developing it.

Fact: Oral lichen planus can occur in people of all age groups, irrespective of their age and gender. It can affect children also.

Myth 2 . lichen planus is like psoriasis.

Lichen planus and psoriasis are different skin conditions. lichen planus has usually better outcome than psoriasis.

Myth 3.Lichen planus cannot be treated.

Lichen planus has effective treatments available. With appropriate treatment lichen planus can be treated to great extent.

Myth 4. Pigmentation or dark spots caused by lichen planus are permanent.

Hyperpigmentation caused by lichen planus may take long time to fade away. Hyperpigmentation can be decreased with early effective treatment.

Myth 5: It can be passed on from one person to another.

Fact: This is an autoimmune disease and is not communicable.

Myth 6: It is hereditary.

Fact: There may be a genetic basis, but it is rare for more than one member of a family to be affected by this disease.

Chapter 12 - Warts, molluscum and viral infections in children

Warts and all… Stop Scratching, Stop Spreading

Dr Rita Vora, Dr. Jalpa Patel, Dr. Devna Pillai, Dr. Shubhangi Hirma

A 9-year-old boy, accompanied by his mother presented to our outpatient clinic with multiple skin coloured rough, hard bumps with fleshy growth present over face and both upper limbs. The lesions gradually increased in number to involve neck and chest. The boy also stated that he noticed similar lesions in one of his friends. While the boy looked unconcerned often picking at the bumps, his mother was afraid if these bumps will keep on spreading to other body parts or leave behind any marks. She had brought with her a list of questions to ask me

Why warts occur?

Are these contagious, and will these spread to other siblings?

Even if treated, will they recur?

How can these be prevented?

How to treat warts?

Why warts occur?

Warts are caused by Human Papilloma Virus (HPV). It is a common viral infection among children. Deficiencies of different vitamins stress, immunosuppressive drugs, autoimmune diseases, solid organ transplant patients can lead to decrease immunity and can lead to development of warts.

Are these contagious, and will these spread to other siblings?

Yes, warts are contagious. Direct contact with warts can lead the condition propagate with ease. If one person touches the wart and another body part, then that body part too may develop warts. One must also be careful not to share personal items like razors, towels etc. with a person with warts.

How can these be prevented in the first place, or how to prevent recurrence after treatment?

Prevent warts from spreading person to person:

- Cleaning or washing hands regularly
- Do not touch the warts of the other people
- Keep warts clean and dry and should be kept disinfected

Prevent warts from spreading to other parts of the body:

- Warts must be kept dry.
- Avoid warts at the time of shaving
- Warts should not be scrapped or scratched
- Tools like nail filer or picker should not be used on the affected skin.
- Keep nails cut.

Prevent warts from spreading from surface to person:

- Towels and personal items should not be shared
- Shoes must be worn in public places like gyms, pools, locker rooms
- If there has been contact with someone else's warts then the area must be cleaned immediately.

5) Warts can be prevented by the following ways:

- One should not pick up the warts.
- Keeping your hand and feet dry.
- Hands must be washed regularly, warts must not be touched and hands must be washed after touching them.

- If using a common bathroom then bathroom slippers or flipflops must be worn.

How to treat warts?

- Salicylic acid
- Cryotherapy: Liquid Nitrogen
- Surgery: Electrocautery, Lasers: CO_2 cutting

Common Side Effects-
Cryotherapy can cause pigmentation, blistering and edema at the site of procedure. Surgery can involve giving local anaesthesia where many children may not agree. Cantharidins may sometimes lead to contact irritant.

Myths and Facts-

1) Myths- Warts are rare
Facts- Warts are common

2) Myths- Warts are a sign of cancer
Facts- Warts aren't a sign of cancer, infact they are benign growths

3) Myths- Warts are caused by toads
Facts- Warts are caused by Human Papilloma Virus

4) Myths- Genital warts are not really warts
Facts- Genital warts are warts. Like warts on other parts of your body, they're caused by an infection with HPV. Genital warts are usually spread by skin-to-skin contact or can be due to child abuse.

5) Warts disappear on their own
Facts- Warts can also recur, even after being removed

6) Myths- You have to live with your warts

Facts- Warts can be removed with variety of treatment options

MOLLUSCUM CONTAGIOSUM… Beware, MC is contagious.

On the same day, another 10-year-old boy Bhavesh Kumar presented to skin department with few raised skin colored bumps over both hands. The lesions were painless and increasing in number and gradually involved face. The lesions were present for 1 month. When I told the mother that these were molluscum contagiosum, she had several questions that needed explanation

1) What is molluscum contagiosum?

2) What are the signs and symptoms of molluscum contagiosum?

3) What are the causes of molluscum contagiosum?

4) Who gets molluscum contagiosum?

5) How is it diagnosed?

6) Is it treatable? What are the treatment options available?

7) Can it reoccur?

8) Can it be prevented?

What is molluscum contagiosum?

Molluscum contagiosum is a viral infection by molluscum contagiosum virus which mainly affects healthy school going children and immunodeficient children aged 2-11 years.

What are the signs and symptoms of molluscum contagiosum?

Molluscum contagiosum starts as a pinhead size spots which can grow in soft smooth pea sized lesion. There is a dent in centre of lesion. It is usually asymptomatic, but sometimes it can be itchy, red and swollen. It can appear alone or in group.

How does it spread?

Molluscum can spread with touching, scratching, close skin to skin contact, sharing towels, clothing and bedding.

What are the causes of molluscum contagiosum?

The molluscum virus causes the rash after it enters a small break in the skin. Bumps usually appear 2–6 weeks after that. The molluscum virus spreads easily from skin-to-skin contact. Kids get it by touching things that have the virus on them, such as toys, clothing, towels, and bedding.

Who gets molluscum contagiosum?

School aged healthy children are more prone to getting infection. Immunocompromised children of age 2 to 11 year are most commonly infected.

How is it diagnosed?

It is diagnosed clinically. They are dome shaped, umbilicated papules. It can also be diagnosed by dermoscopy and histopathological examination.

Is it treatable? What are the treatment options available?

Yes, Molluscum contagiosum is treatable. Various treatment options available are, Liquid nitrogen application, Topical KOH application, Podophylline tincture application and mollusca extraction with TCA/ phenol application.

- Topical tretinoin
- Topical imiquimod
- Topical cidofovir
- Topical TCA
- Topical KOH
- Cryotherapy
- Autoinoculation
- Electrodessication
- Curettage

Common side effects of treatment :-

- Cryotherapy can cause pigmentation, blistering and edema at the site of procedure. Imiquimod can cause hard, flaky skin , redness ,swelling and burning of skin.

Can it reoccur?

Yes, it can reoccur. Yes, it can be prevented. Wash hands well and often with soap and water. Do not share towels or clothing. Do not share kickboards and other water toys. Do not touch or scratch bumps or blisters on the skin.

Varicella Zoster (Chicken Pox)

Another 12-years-old girl was brought to the outpatient clinic with fluid filled lesions on a red base which started over trunk and gradually involved face and both upper limbs since 3 days. The lesions were preceded with fever before 2 days and were associated with itching. His younger sibling also had similar type of lesions the previous week. Looking at the

lesions, it was clear that the boy had chicken-pox but the mother was worried with the diagnosis and asked me several questions

What causes Chicken pox?

Does chicken pox spread by close contact?

Will the chicken pox holes go away?

Can we sleep in bed during chicken pox?

Can we bathe a child suffering from chicken pox?

How do you treat chicken pox in children?

What causes Chicken pox?

Varicella zoster also known as chicken pox is causes by Varicella Zoster Virus

Can chicken pox spread by close contact?

Yes, chickenpox can spread through droplets in the air by coughing or sneezing, in their mucus, saliva (spit), or fluid from the blisters, used clothes and bedspreads or contaminated baths. The person is contagious from 2 days before onset of rash to 5-6 days after the onset or until all lesions crust.

Will the chicken pox holes go away?

The chicken pox scars can form if the lesions are plucked with hands. The lesions will heal on their own after 2-3 weeks.

Can we sleep in bed during chicken pox?

Yes, you can sleep in bed during chicken pox infection. It is important to get good rest and diet for recovery. However, it is advisable to keep your sheets and cloths away to avoid spread of chicken pox.

Can we bathe a child suffering from chicken pox?

Yes, the child can take a bath. The patients are advised not to rub the skin vigorously to avoid spread of infection and also formation of post chicken pox scars.

How do you treat chicken pox in children?

- The affected child must be isolated for 7 days so that the disease doesn't spread.
- One should not scratch the rash because that may cause scarring.
- Wear clothes that are loose and light to ensure that the skin is as comfortable as possible.

- The dermatologist could prescribe certain ointments and calamine lotion to soothe the itchiness.
- Keep your nails clean and cut short in order to avoid bacterial infection.
- In severe chicken pox infection, Acyclovir 20mg/kg (≤800 mg) per oral 4 times daily for 5 days. Valacyclovir 20mg/kg (≤ 1000 mg) per oral 3 times daily for 5 days when prescribed by a dermatologist.

Common Side Effects-

Secondary bacterial infection of the skin with scarring.

Myths and Facts-

1) Myths- Once you have had chicken pox you are immune for life:

Facts- They can recur again in life. After you or child has had chicken pox the body develops antibodies and immunoglobulins. These antibodies fight the chicken pox virus later in life.

2) Myths- There is no protection against chickenpox

Facts- There is complete protection when vaccination is given to everyone. Also anti-viral medicines can help in treating blisters and prevent the complications too.

3) Myths- Chicken pox can only be treated by worshiping Goddess 'Shitala Devi'

Facts- Chicken pox is usually self-limiting but antiviral medications are needed in severe cases.

4) Myths- Patient of chicken pox should not attend doctor for specific period of time before worshipping temple

Facts- Start treatment as soon as few lesions of chicken pox appear, to decrease the chances of spread of lesions and complications.

Chapter 13 – Scabies and Pediculosis In Children

Dr Vinutha Rangappe

Itching everywhere, but more at night

A 10-year-old boy Gaurav was brought by his parents to dermatology out patient department with history of generalized itching for 15 days. Itching was more during night. They also gave similar history in the younger sibling since past 2 days. In fact, it was his father who developed itching for a month for which he had taken some over-the counter medication from the pharmacy without prescription but with little relief; and now other family members including the children were experiencing similar complaints. Hence, they were anxious to know what sort of contagious disease had they developed

Questions asked by the patients were:

1. *What is the cause for itching?*
2. *Is it contagious? If yes, how is it transmitted?*
3. *Who is at risk of acquiring the disease?*
4. *What are the common symptoms and are there any other types of presentation?*
5. *Is it a serious condition?*
6. *Can scabies be treated?*

What is scabies? Is It Contagious? If Yes, How Is It Transmitted?

Scabies is a contagious skin condition caused by mites. It is more commonly seen among children and young adults due to close physical contact in schools and play area. It presents as itchy skin rash with an urge to scratch especially during night. It is a contagious disease, hence spreads from one person to another through prolonged skin to skin contact. Transmission occurs more during cold climates. Sometimes they can also be transmitted from shared beddings and clothing.

What is the cause for itching?

The most probable cause for itching in the child is scabies infestation. In humans' scabies is caused by a mite called *Sarcoptes scabi var hominis*. It is an eight-legged tiny mite. They cannot jump or fly but can crawl across the skin surface. Once infected

the female mite makes a small tunnel on the superficial surface of skin. It lays around 40-50eggs. These eggs hatch in about 3-4 days and larva comes out of the burrow into the surface of the skin. The time taken for the egg to hatch and become a fully developed adult mite is about 10-12days.

Who is at risk of acquiring the disease?

It can occur in all human being but most common among children and young adults. It is also seen among people with low immunity, poor hygiene, elderly and those who live in close crowded conditions.

What are the common symptoms and are there any other types of presentation?

The symptoms start after about 3- 4 weeks of contact with the infected person. The main complaint is itching all over the body which is severe at night. Itching occurs due to allergic response to mite and its products. Reddish rash and grey lines can occur almost over any part of the body but most often found in between the fingers, inner side of wrist, elbow folds, arm pits, around the breast, waist area, genitalia and inner side of thighs. This forms an imaginary circle called as circle of Hebra. These rashes are secondary to scratching.

Other types of scabies:

1. *Scabies in clean*: Here itching may be the only symptom. Rashes if present are only few in number.
2. *Infantile scabies*: In infants' rashes may be seen even on face and scalp. Fluid filled blisters can also occur.
3. *Crusted scabies*: This type is seen in people with impaired immunity and is highly contagious. They present with thick black crusts and raised lesions involving palms, soles, ears, elbows, knees and scalp. Number of mites in these individuals is over a million as compared with 10-20 in classical scabies.

4. *Nodular scabies*: Skin colored itchy raised lesions are seen more over genitalia which can persist for as long as one year after effective anti-scabietic treatment.
5. *Bullous scabies*: Fluid filled blisters can occur resembling other bullous conditions like bullous pemphigoid.
6. *Animal scabies*: Other species of mites from domestic animals commonly dogs can infect humans. However, these mites cannot multiply on human skin hence symptoms will be limited for minimal period.

If you or your child has any of the above complaints then consult your nearest Dermatologist for further clarification and treatment.

Is it a serious condition?

Scabies is a not a serious infestation. But it can lead to some complications like,

- Scratching results in break in the skin and this can result in secondary bacterial infection.
- Rare but important complication is post streptococcal glomerulonephritis
- Vessels of skin can get inflamed leading to vasculitis.

Can scabies be cured?

YES, it can be completely cured by following the simple 3 steps of treatment:

1. Treating with anti-scabietic medications: Both topical and oral anti-scabies medications are available.

   Various topical agents used are:

   - Permethrin 5% cream
   - Benzyl benzoate 12.5%
   - Lindane 1%lotion/cream
   - Crotamiton 10% cream
   - Ivermectin 1% lotion

   They are applied all over body below chin. To be applied weekly for 2 weeks.

For children below 2 years face and scalp are also to be treated.
Oral drug includes: Ivermectin 200microgram per kilogram weekly once.
Oral medication should not be given in pregnancy, lactation and children less than 2 years of age.

Following instructions need to followed:

- The medication should be applied to clean dry skin.
- The medication is applied at night before going to bed.
- Hands must be washed after applying.
- Avoid touching your eyes, nose or mouth.
- All household contacts must get treated at the same time.
- Review with your dermatologist after a week.
- Itching and rashes take 2-4 weeks to reduce.

2. Symptomatic treatment with oral antihistamine pill is given for few days.
3. Prevention – Transmission of the disease needs to be prevented by
    - Avoiding contact with the infected person till complete treatment.
    - All household and close contacts need to take the treatment at the same time to avoid ping pong infection.

Pediculosis in children

There's something in my head

A 7-year-old girl Purva with long flowing hair was brought by her mother with history of itching over the scalp for 2 months. Upon detail enquiry with the child, she said there was similar complaint in her friend in the school.

Questions asked by the mother were:

1. *What is the cause for itching? Can it involve the rest of the body?*
2. *What is Pediculosis? Is it a contagious disease? If yes, how does it spread?*
3. *What are the common symptoms?*
4. *Can it be treated? How to prevent it?*

What is the cause for itching? Can it involve the rest of the body?

The cause for itchy scalp in this girl was pediculosis infestation. It is cased by lice. There are three types of pediculosis:

1. Head lice: Pediculosis capitis is the infestation of scalp hair.
2. Body lice: Pediculosis corporis is infestation of hairy areas of body. These lice are present in the seams of clothing.
3. Crab lice: Pthirus pubis affects pubic area.

They are wingless insects and have 6 legs. Body louse is the largest and crab louse is the smallest. They feed by sucking human blood. The female louse lies around 8-10 eggs/nits. These eggs hatch and reaches maturity in about 18-20days.

What is Pediculosis? Is it a contagious disease? If yes, how does it spread?

It is an infestation caused by lice affecting scalp and hairy areas of body. Main complaints include itching and crawling sensation. Head and body lice are transmitted from direct contact with the infested person. Head lice is more frequently seen among school going children particularly girls with long hair. Body

lice infestation is common among people who live in crowded place and with poor hygiene.

Crab lice spreads through sexual contact.

What are the common symptoms?

Itching is the main complaint. In head lice infection itching will predominantly be present over the back of the scalp. Nits can be seen firmly attached to the shaft of the hair at an angle. The nits away from the scalp are always empty. Body lice leaves in the seams of the clothing and come on the surface of the skin only for the feeds. Infested individuals can have reddish rashes and crusts due to scratching. Crab lice can be found in pubic area as well as hair over axilla arms and eyelashes. Bluish patches can be seen sometimes on thighs of fair skinned individuals called as maculae ceruleae.

Complications: open area on the skin due to scratching can get secondarily infected with bacteria resulting in pus filled lesions and pain.

Body lice can transmit other diseases like relapsing fever, trench fever and epidemic typhus through their saliva while sucking blood of humans.

Can it be treated? How to prevent it?

Head lice: Permethrin 1% rinse, lindane and malathion shampoos are available to be used weekly once. Metal and plastic combs for combing after conditioning the hair might act as an add on therapy. In resistant cases shaving the head will give complete cure. Oral ivermectin pills can also be used.

Body lice: Clothing and bedding should be treated by simple laundry and ironing.

Crab lice: Permethrin 1% rinse left over the affected area for 10 mins will be useful. Nits can be removed with tweezers. Contact person needs to take the treatment at the same period.

Treatment should be repeated after 7-10 ten days to kill newly hatched lice.

Avoid contact with infected person, sharing of clothes, comb and beddings.

Maintaining personal hygiene is also necessary for preventing infestation.

Chapter 14 - Tuberculosis and Leprosy In Children

All tuberculosis do not cough

Dr Nibedita Patro

On a busy day in the outpatient department, Govind, a daily laborer and his wife brought their 2-years old son, Abhijit with a bump on the skin in his right buttock for 6 months stays. Abhijit usually stayed at home with his elder sister, Malati, playing on the streets for the whole day. Her sister too looked unwell, stunted, and had been suffering from intermittent low-grade fever for several months. Initially the bump was asymptomatic, but now it had gradually grown in size with intermittent pus discharge from the bump. The discharge temporarily subsided with some oral antibiotics given from a local medicine store, but the lesion didn't heal completely. Finally, when the family visited me, I advised a skin biopsy and other routine tests to confirm my clinical diagnosis of skin tuberculosis. I also advised them to take Malati to the pediatrician to check for other symptoms of tuberculosis in her. Although Govind was hesitant to ask any questions, his wife looking a lot more concerned came up quite a few

- *What is skin tuberculosis?*
- *What is the cause and how it transmits?*
- *Is it curable? What is the treatment and for how long?*
- *What are the complications?*
- *Does it spread by touching, shaking hands, eating together?*

What is skin tuberculosis?

Tuberculosis (TB) is a slowly progressing bacterial infection mainly affecting lungs, but it can also affect other organs of the body like skin, lymph nodes, gastrointestinal tract, liver, spleen, brain, kidneys etc. Skin tuberculosis is prevalent in children living in rural areas and poor hygienic conditions. The common types of skin tuberculosis affecting children are, lupus vulgaris (which looks like a bump), tuberculous chancre (bump with a shallow ulcer), scrofuloderma (multiple pus discharging sinuses) and tuberculosis verrucosa cutis (warty bump).

What does the skin tuberculosis look like in children?

Skin tuberculosis in children may present as a long standing, asymptomatic skin lesion in the form of a

- A non-healing sore
- Skin colored to reddish slowly spreading bumpy growth
- A cauliflower like growth
- Persistent lymph node swelling on neck or under arms
- A wolf eaten appearance on face (nose and mouth area)
- Associated with fever on and off (evening rise of temperature)
- Loss of appetite and gradually loss of weight
- Rarely children develop skin TB at the site of BCG vaccination given at birth. It presents as a non healing bumpy growth or a sore few weeks following vaccination.

What is the cause of this disease and how does it spread?

Tuberculosis is caused by *Mycobacterium tuberculosis*. Skin tuberculosis is transmitted mostly through external injury like, thorn prick injury, after abscess drainage, injury on exposed skin in children not wearing full clothes in rural villages. Sometimes it may spread through blood in a person having lungs or any other organ tuberculosis. Also underlying lymph node tuberculosis may spread to the overlying skin.

How skin tuberculosis is diagnosed?

It is diagnosed mostly by detailed clinical examination by a dermatologist. It is confirmed by skin biopsy and a histopathological study. Some routine tests like, complete blood count, liver function test, kidney function test, erythrocyte sedimentation rate, mantoux test, and chest x-ray are done before starting the treatment.

What is the treatment?

Anti-tubercular drugs are the mainstay of therapy. The first line anti-tubercular drugs include, isoniazide, rifampicin, pyrazinamide and ethambutol. They are

advised according to the body weight of the child for a minimum of six months duration under DOTS regimen. The other second line drugs advised in case of drug resistance to first line drugs are streptomycin, ethionamide, amikacin, kanamycin, levofloxacin, moxifloxacin, gatifloxacin etc., all to be taken after proper doctor consultation.

What home care precautions can we undertake while nursing a child with skin tuberculosis?

- Maintain good hygiene of skin
- Avoid harsh soaps and use syndet based soaps
- Avoid contact with insects and flies on the sore area
- Avoid any topical cream application without dermatologist's advice
- Avoid any type of dressing or surgical intervention without dermatologist's advice
- Use full body clothing
- Keeping nails trimmed to avoid scratching and secondary bacterial infection
- Follow a healthy diet for proper nutrition
- Drink plenty of water daily to minimize side effects of medications

What possible complications can occur if left untreated?

As the disease spreads very slowly, the complications usually occur late in the course. The rare complications are

- spread to different organs of the body
- permanent disfigurement of face
- secondary infections
- spread to bones that may lead to fractures and bony deformity
- rarely skin cancer in long standing disease.

Should I continue the usual vaccinations?

BCG vaccination at birth is 70% - 80% protective against tuberculosis. Normal pediatric vaccination schedule should be routinely followed as per guidelines in any child diagnosed with skin TB.

What is the long-term prognosis in this disease?

Tuberculosis in children is fully curable with proper treatment. Response to treatment can be seen as early as 1 -2 months after starting drug therapy. In some cases, residual pigmentation and scarring of skin may remain.

A happy ending to the story

With proper anti-tubercular therapy for 6 months, Abhijit's cutaneous lesion subsided completely leaving a faint mark. Simultaneously his sister Malati too was diagnosed with disseminated tuberculosis in the department of Pediatric Medicine and adequately treated which led to complete recovery. The parents were advised proper hygiene practices.

Myths and Facts

1. Myth – TB is genetic or hereditary
   Fact – TB is caused by a bacteria and is transmitted through already affected person
2. Myth – TB spreads through shaking hands
   Fact – It spreads through various modes like nasal droplet infection in pulmonary TB, external inoculation and hematogenous spread in skin TB.
3. Myth – There is only one type of TB presenting as cough
   Fact – TB can affect different organs of our body like lungs (most common), skin, brain, intestinal tract, liver, spleen, brain, kidneys etc., not presenting as cough every time.
4. Myth – Once cured TB will not develop again
   Fact – One can again get infection. Complete treatment should be ensured once diagnosed.
5. Myth – TB cannot be cured.
   Fact – It is fully curable with proper anti-tubercular therapy.
6. Myth – TB is only seen in underprivileged people.

Fact – It can affect any person of any socio-economic background.

Leprosy In Children

Leprosy can be cured from skin and needs to be cured from mind

Sonu, a school going child with a white patch…

Rashmi and Sahil brought their 7 years old son Sonu who was studying in class 2 in an International school to my skin out-patient department with complains of a white colored patch on right arm. It was there since 2 – 3 months and now a similar colored small patch had started appearing near the larger one for the last 15 days. Rashmi thought it to be because of sun-exposure, but the school teacher asked the parents to go for a dermatologist's opinion. The child and parents had no other complaints except the discoloration. After examination, I gently raised a suspicion for it to be leprosy and asked for some routine blood and skin tests. The parents were visibly shaken, and quite apprehensive on hearing the diagnosis and were initially unwilling to even entertain this possibility or discuss about the disease. Soon, I was fired a volley of questions.

- What is leprosy?
- What is the cause and how it transmits?
- Is it curable? What is the treatment and for how long?
- What are the complications?
- Does it spread by touching, shaking hands, eating together?

What is leprosy?

Leprosy (commonly known as Kushtha Rog) is a chronic bacterial infection affecting the skin and nerves. It presents as a light colored or reddish skin patch with loss of sensation over it and/or nerve affection with numbness.

What leprosy looks like in children?

- Light colored or reddish round patches on skin with loss of sensation over the patches
- Numbness on hands and feet

- Loss of sensation to hot and cold objects
- Weakness of hands and feet
- Long standing sores on hands and feet
- Nodules on ear lobes
- Loss of eye brows
- Persistent nasal stuffiness and loss of smell
- Painful bumpy lesions on body associated with fever

Cause and mode of transmission

Leprosy is caused by the bacteria *Mycobacterium leprae*. It spreads through small droplets from nose and mouth of infected persons. Leprosy is commonly seen in children living in overcrowded families having poor hygienic conditions. However, in an endemic country like ours, no socio-economic strata is completely immune to the disease, especially in areas with relatively higher prevalence.

How leprosy is diagnosed?

Leprosy can be diagnosed by the dermatologist on the basis of skin and nerve examination. Light colored skin patches with numbness, numbness of hands and feet are some clues to diagnose leprosy at early stage. A skin smear test from earlobes and sometimes a skin biopsy needs to be done to confirm the diagnosis.

What is the treatment of leprosy?

Multidrug therapy is the mainstay of treatment in leprosy. It consists of medications like Rifampicin, Clofazimine and Dapsone. The drugs are continued for either 6 or 12 months depending on the type of lesions to be decided by the dermatologist. Other medications used during complications called type 1 and type 2 reactions are corticosteroids, thalidomide, methotrexate etc. Long standing sores on feet need strict bed rest for complete healing. Hand and feet deformities need surgical correction.

What are the home care/practical tips in managing a patient with leprosy?

- Daily oil/moisturizer application on hand and feet

- Daily self examination of numb hands and feet for any redness, bumps, cracks or sores
- Daily physiotherapy of hands and feet as advised by the doctor
- Avoiding direct contact of numb areas from hot or cold objects
- Avoiding contact with insects and flies on the sore area
- Bed rest and rest to affected limbs in case of muscle weakness
- Healthy dietary habits and regular physical exercise
- Showing empathy towards the child and discouraging non-touchable behavior in society
- Follow a healthy diet for proper nutrition
- Drink plenty of water daily to minimize side effects of medications

What are the potential complications of leprosy if untreated?

1. Type 1 & Type 2 reactions - These are hypersensitivity reactions to the lepra bacilli where either the existing lesions become redder, or new painful red bumps appear on the body. These new rashes may require treatment with oral corticosteroids.
2. Hand & feet muscle weakness and disability
3. Hand and feet deformities
4. Non healing sores on hands & feet leading to amputation and self mutilation
5. Facial disfigurement
6. Loss of smell
7. Loss of eyebrows and eye lashes
8. Blindness in severe cases
9. Multi-organ failure and rarely death

Should my child with leprosy receive routine vaccination?

Normal vaccination schedule should be followed in children along with multidrug therapy in leprosy. Live vaccines should be avoided during immunosuppressive therapy (corticosteroids, methotrexate etc.). Multiple vaccines are under trial and yet to be approved for prevention of leprosy.

What is the long term prognosis of leprosy in children?

With adequate multidrug therapy, leprosy is fully curable. Sometimes residual numbness and skin discoloration may persist lifelong even after complete therapy. Non-treatment or delay in treatment may lead to persistent hand and feet deformities, amputation, and very rarely death due to severe complications.

Another happy ending…

After my proper counselling on complete cure of the disease with the help of treatment, the parents agreed for further investigations. Sonu was started on multidrug therapy (availably free of cost to all the leprosy patients as part of National Leprosy Eradication Program) according to his body weight, which he continued for 6 months under my regular supervision. After 6 months, Sonu had minimal skin discoloration of the affected site with no other complications. The treatment was stopped and parents were counseled regarding some residual skin discoloration which will gradually subside on long run. The parents were quite happy and acknowledged my sincere efforts in early diagnosis and treatment of their son.

Myths & Facts about leprosy

1. Myth - Leprosy is not a problem anymore.
   Fact – Although India has declared elimination of leprosy in 2005, it has the highest number of leprosy cases in the world as of 2020, followed by Brazil and Indonesia.
2. Myth - Leprosy is not curable.
   Fact – Leprosy is completely curable with multidrug therapy for adequate duration. Sometimes residual skin discoloration and numbness may persist for lifelong even after complete treatment.
3. Myth - Leprosy is highly contagious.
   Fact – Leprosy doesn't spread by touching, shaking hands, eating together or playing together etc. It is a very slowly progressive infection and may

manifest after 1 to 5 years of infection. Children usually get the infection from long term close contact with a highly infectious patient of leprosy at home.

4. Myth - Only old people are affected by leprosy.
   Fact – Leprosy is known to affect all ages and races of humanity. Old people usually present with long term complications of untreated leprosy.
5. Myth – Leprosy is only seen in underprivileged people.
   Fact – It can affect any person of any socio-economic background.

Chapter 15 - Skin In Pediatric Covid

Dr Maitreyee Panda, Dr Anil Kumar Panda

Fever with rash in the middle of the pandemic

At 9 o, clock in the morning, I got a call from a hospital attendant that a five year old male boy Ranjan had been brought by his mother to my outpatient clinic with complaints of high fever and sore throat with rash of three-days duration. Being in the middle of the raging pandemic, I was initially sceptical whether I should see a febrile patient in-person, or instead opt for an online consultation. But soon, the pediatric dermatologist inside me (and the motherly feelings for the sick child) got the better of me, and I quickly grabbed my N-95 mask and rushed from my office to the out-patient clinic. He was healthy and fully immunised previously. The parents reported sudden and simultaneous onset of both fever and rash. The fever was high in grade, reaching a maximum of 101.0 degree Fahrenheit and was intermittent in nature. The fever was responding to antipyretics and was also associated with sore throat and cough. The skin rash started as multiple reddish elevated lesions (hives) across his entire body sparing the face. His hives were moderately pruritic and associated with burning sensation. These rashes were transient in nature and subsiding within few hours. The child had no known history of prior allergy to any foods and drugs. All laboratory workup for diagnosis of fever and rash come negative except Covid RTPCR, which came positive. On further taking the family history, it was found that his father had similar symptoms of fever and cough ten days back and was detected with Covid-19. The parents looked very apprehensive once the diagnosis of COVID-19 infection in their child was proffered. With a fearful look on their faces, they asked me a string of questions

1) *What is Covid-19?*
2) *How it is transmitted?*
3) *How to explain the skin findings associated with Covid-19?*
4) *What are the general symptoms of Covid-19 in pediatric population?*
5) *What are the different skin manifestations associated with Covid-19 in children and how it is different from that of adults?*
6) *How to identify the various skin manifestations?*
7) *What are the various treatment options?*

8) *What are the general instructions and measures to be followed by parents?*
9) *What are the various mimickers of skin manifestations associated with Covid-19?*

What is Covid-19?

Coronavirus disease 2019 (COVID-19) is caused by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is supposed to have originated from bats at a food market in Wuhan, China but since then its main mode of transmission has been found to be from human to human.

How it is transmitted?

1. The transmission is mainly airborne through respiratory droplets (possibly aerosols), but there is some evidence of fecal-oral transmission in pediatric population.
2. There is no evidence of breast milk transmission.
3. Possible vertical transmission, from mother to fetus in utero or during delivery is seen in few reports.

How to explain the skin findings associated with Covid-19?

It was found that the virus can invade the endothelial cells of blood vessels directly as its receptor; ACE2 is widely present on their surface. These receptors are found in both respiratory epithelium and cells of epidermis. Other mechanism is related to vasculitis and coagulopathy.

What are the general symptoms of Covid-19 in pediatric population?

Global COVID-19 trends suggest that children are far less likely to be infected than adults. Most children are asymptomatic and even if symptoms occur, usually are mild. The common symptoms are :

1) Flu like symptoms like such as fever, cough and cold.

2) Gastrointestinal complaints like vomiting and diarrhoea and
3) Respiratory difficulties.

What are the different skin manifestations associated with Covid-19 in pediatric population and how it is different from that of adults?

The Covid-19 related cutaneous manifestations in children differ from that of adults. While the skin manifestations such as maculopapular rash, urticaria or vesicular rash can be seen in people of all age groups, certain manifestations such as chilblains, erythema multiforme (EM) and cutaneous manifestations of multisystem inflammatory syndrome in children (MIS-C) are more frequently seen in pediatric population.

Cutaneous manifestations of COVID-19 in both the adult and pediatric population.

Clinical manifestation	**Adults**	**Children**
Macules and papules	✓	✓
Urticarial eruption	✓	✓
Vesicles/varicelliform-like eruption	✓	✓
Chilblain-like lesions	✓	✓
Erythema multiforme	✓	✓
MIS-C		✓
Half-moon nail sign	✓	

MIS-C: Multisystem inflammatory syndrome in children

The most widespread cutaneous manifestation of COVID-19 in children include

1) Chilblain-like lesions,
2) Urticaria,
3) Erythema multiforme,

4) Kawasaki disease-like multisystemic inflammatory syndrome (MIS) and
5) Non-Specific Cutaneous Lesions.

Q.6.How to identify the various skin manifestations associated with Covid-19?

Chilblain:

How to identify?

- These are the most common cutaneous manifestation reported among children affected with Covid-19.
- Multiple reddish, purpuric and/or violaceous macules are seen predominantly over the finger and toes (Covid toes).
- Pain/burning sensation as well as pruritus were commonly reported symptoms.
- The lesions are usually confined to the toes and do not cross the meta-tarsophalangeal joint.

Urticaria:

How to identify:

- Acute urticaria is characterized by reddish- or skin-coloured elevated lesions or swelling which are itchy and usually subside within 24 hours, and is less than six weeks in duration.
- Infections (mostly upper respiratory infections), drugs and food allergy are the most common precipitating factors in children.
- A possibility of drug induced urticaria should be kept in mind due to use of antipyretics and antibiotics in Covid-19.
- History regarding systemic symptoms and household contacts gives a hint towards possible underlying cause of SARS CoV-2 infection.

Erythema multiforme-Like eruption:

How to identify:

- Erythema multiforme is an acute onset immune mediated reaction characterized by a distinctive rash with erythematous border and pale central area (target lesion).
- Infections such as herpes simplex virus and mycoplasma pneumonia, and drugs are frequently associated with children.
- Majority of cases in children develop atypical target lesion confined to palms and soles.
- The lesions are usually smaller, less widespread and may be itchy or painful.
- A gap of few days to three weeks between Covid-19 infection and appearance of EM-like rash is seen.

Multisystem Inflammatory Syndrome in Children:

<u>How to identify</u>:

- Multisystem inflammatory syndrome in children (MIS-C) is a relatively common complication of COVID-19 that presents clinically resembling incomplete Kawasaki disease.
- Ongoing fever PLUS more than one of the following is required to suspect MIS-C
    - ✓ Stomach pain
    - ✓ Diarrhea
    - ✓ Skin rash
    - ✓ Bloodshot eyes
    - ✓ Dizziness (signs of low blood pressure)
    - ✓ Vomiting
- Commonly reported cutaneous features include redness over palms and soles, diffuse non-specific eruptions, redness and cracking of lips, strawberry tongue, periorbital and malar erythema.

<u>What warning signs to look for</u>:

- Severe stomach ache
- Breathlessness

- Pale or blue-coloured skin, lips or nail beds — depending on skin tone
- Inability to wake up or stay awake
- New confusion

Non-Specific Cutaneous Lesions:

- Maculopapular or morbilliform rash,
- Cutaneous vasculitis,
- Dengue-like exanthem
- Retiform purpura,
- Livedoid lesions,
- Petechial rash and
- Acral ischemia.

What are the various treatment options?

❖ **Chilblains-How to treat:**

✓ The treatment strategy is just "wait and see".

✓ Usually spontaneous resolution over days to weeks is seen in children.

✓ Symptomatic treatment with analgesics and antihistaminic usually suffices.

❖ **Urticaria-How to treat:**

✓ The treatment is symptomatic with the use of non-sedating antihistamines.

✓ Corticosteroids use is limited to resistant cases.

❖ **Erythema multiforme-How to treat:**

✓ Symptomatic therapy with topical or oral corticosteroids is enough in most of the cases.

❖ **Multisystem Inflammatory Syndrome in Children-How to treat:**

Most children with MIS-C need to be treated in a hospital. Some need treatment in a pediatric intensive care unit. Supportive care may include:

- ✓ Fluids for dehydration
- ✓ Oxygen to aid breathing
- ✓ A breathing machine (ventilator)
- ✓ Blood pressure medications to normalize low blood pressure related to shock or to help with heart function
- ✓ Medications such as aspirin or heparin to reduce the risk of blood clots.
- ✓ Rarely, extracorporeal membrane oxygenation (ECMO) is needed that does the work for heart and lungs.

Other types of care

Treatment to reduce swelling and inflammation may include:

- ✓ Antibiotics
- ✓ Steroid therapy
- ✓ Intravenous immunoglobulin (IVIG), a blood product made up of antibodies.

Q.8. What are the general instructions and measures to be followed by parents?

The CDC recommends following these precautions for avoiding exposure to the virus that causes COVID-19:

- **Keep hands clean**: Soap and water should be used for hand washing for at least 20 seconds. If not available, hand sanitizer can be used that contains at least 60% alcohol.
- **Avoid people who are sick**: People having symptoms of coughing, sneezing or signs suggesting they are sick should be avoided.
- **Cover your mouth with a tissue or your elbow when you sneeze or cough**.
- **Practice social distancing**: At least 6 feet (2 meters) distance should be maintained from other people when outside of your home.
- **Avoid touching your nose, eyes and mouth**: Encourage your child to avoid touching his or her face.

- **Wear cloth face masks in public settings**: Child should wear face masks that cover the nose and mouth at a crowded place or large gathering in an indoor or outdoor event.
- **Clean and disinfect high-touch surfaces every day**: This includes areas of your home such as remotes, handles, light switches, countertops, doorknobs, tables, chairs, desks, keyboards, faucets, sinks and toilets.
- **Wash clothing and other items as needed**: Using the warmest appropriate water setting on your washing machine. Remember to include washable plush toys.

Q.9. What are the various mimickers of skin manifestations associated with Covid-19?

- Chilblain
  - ✓ Meningococcemia
  - ✓ Hemorrhagic edema
- Acute Urticaria
  - ✓ Food or Drug allergy
  - ✓ Viral infections.
- Morbilliform rash
  - ✓ Measles
  - ✓ Roseola infantum
  - ✓ Erythema infectiosum
  - ✓ Dengue/chickungunya
- Erythema multiforme
  - ✓ Septic emboli
  - ✓ Trauma
- Multisystem inflammatory syndrome in children
  - ✓ Kawasaki disease
  - ✓ Toxic shock syndrome
  - ✓ Hemophagocytic lymphohistiocytosis

Chapter 16 - Pediatric STI

Dr T Haritha

The great mimicker

It was post lunch session. Since there were no patient, I started reading an article when a a couple of young happy-go-lucky teenagers came to the clinic. They were on an adventure trip from Ladakh to Goa. One of the boys in the group complained that he had been having some rash on the body for the past few days. The rash was non itchy, symptomatic. It was present over her face, trunk, palms, soles. On enquiring in private, he admitted to promiscuous sexual behavior including intercourse with his girlfriend accompanying him. Later on, he was physically examined when no abnormality was detected. Blood tests were ordered. Lab results confirmed secondary syphilis. Human Immunodeficiency Virus disease was ruled out by tests. However, both of them were curious and anxious and blurted out a lot of questions

- *What is syphilis? How does it spread?*
- *What are the presenting complaints of syphilis?*
- *How long will the sores of primary syphilis take to heal?*
- *What tests will be done for syphilis?*
- *What is the treatment for syphilis?*
- *Is there a cure for syphilis?*
- *What will happen if syphilis is left untreated?*
- *What is the significance of diagnosing syphilis in a pre-pubertal child?*
- *What are other sexually transmitted infections that we can be afflicted with and we should be aware of?*

What is syphilis? How does it spread?

Syphilis is a bacterial infection spread through unprotected vaginal or anal, oral sex or by sharing sex toys.

What are the presenting complaints of syphilis?

Syphilis has three stages. They are:

Primary –this is the first stage. It starts as a painless sore in the vagina or penis or anus, or mouth.

Secondary – this is the second stage. It starts as a rash over the body along with a flu-like illness in some cases.

Tertiary – this third stage develops after a long time in cases of untreated syphilis. Any organ of the body can get affected. Heart, brain, bones, eyes, nerves and other internal organs can get involved.

How long will the sores of primary syphilis take to heal?

Primary syphilitic ulcers are highly infectious. They take 4-6 weeks to heal.

What tests are done to diagnose syphilis?

A physical examination is conducted for any sore or ulcer over private parts, mouth, or anus. If any ulcer is found, fluid is collected from the ulcer using a cotton swab. A blood test (for TPHA and VDRL with titre) will be done.

Is there a treatment and cure for syphilis?

Treatment is effective in primary and secondary stages and leads to a cure. Penicillin injection is the treatment of choice for syphilis. In case of allergy to penicillin, desensitization or a process of inducing tolerance to penicillin will be done. If that is not feasible, other treatments like doxycycline, tetracycline, ceftriaxone, azithromycin are available.

What will happen if syphilis is left untreated?

If untreated, syphilis can progress to tertiary syphilis in one-third of cases. You can land up with multiple complications due to internal organ involvement if you do not take treatment in the early stages.

What is the significance of diagnosing syphilis in a pre-pubertal child?

It signifies sexual abuse. Perinatal acquisition and rare vertical transmission have to be excluded before coming to the conclusion of sexual abuse. Sexual abuse has to be reported to the local governmental body which is authorized to receive suspected child abuse or neglect reports.

What are other sexually transmitted infections that we can be afflicted with and we should be aware of?

- Genital Scabies
- Herpes simplex infection
- Gonorrhea
- Trichomoniasis
- Bacterial vaginosis
- Pediculosis pubis
-

Genital Scabies - The itch mite disease

Common queries and questions by parents/patients:

What is genital scabies?

Scabies is an external parasitic infestation caused by "itch mites". Scabies causes generalized itching. In case of genital scabies, lesions get concentrated over genitalia predominantly without involving other sites.

How does the disease spread?

The disease spreads by close skin-to-skin contact.

What are the presenting complaints?

The presenting complaints begin about four to six weeks after getting infected. Severe itching, more at night, is the most common complaint that occurs all over the body. Red rash is present over the genitalia predominantly, or any other sites: finger web spaces, wrist, elbows, armpits, breasts, around the belly button, pubic area, buttocks, knees, ankles, toe web spaces. If the disease develops for the second time, symptoms may begin in less than a week. Broken skin may develop with oozing that may look like eczema.

How to diagnose genital scabies?

The doctor or nurse will do a physical examination and take a scraping from the rash for further microscopic analysis.

Is partner treatment necessary?

Yes. Partner treatment is necessary if partner has got symptoms. The disease may often develop between partners if partners do not get treated simultaneously.

What will happen if it is left untreated?

The itch mite continues to stay on the human body.

How to treat genital scabies?

External application of creams or lotions will be required. After a thorough scrub bath, the patient has to apply the medicine externally all over the body except the face. Cream or lotion will be left throughout the night. This will be followed by regular bath next day morning. The same procedure will have to be repeated every week for two weeks. Itch mites can live outside the human body for up to 3 days. Hence, the next day, all your clothes, towels and bed linen must be washed with water at 50^0 C or higher to kill mites.

Genital Herpes Simplex - The recurring sexually transmitted infection

Common queries and questions by patients/parents:

What is genital herpes?

Genital herpes is a virus by name Herpes Simplex Virus (HSV). There are two types of HSV. HSV-1, HSV-2. Above the umbilicus is affected by HSV-1, and below the umbilicus will be affected by HSV-2 usually. There can be modifications to this rule sometimes. Herpes causes sores over the genitalia or anus. If the same thing happens near the mouth, it is called cold sores or fever blisters.

How is genital herpes transmitted?

It is transmitted through small cracks present in the skin through skin-to-skin contact. Penetrative sex is not essential for its transmission.

What are the presenting complaints of genital herpes?

- Sores over genitalia
- Flu-like illness with fever, headache, body-aches
- Swollen glands
- Water bubbles or blisters burst within a day or two, leaving raw areas
- Stinging or tingling, or itching in the genital area
- Burning sensation while passing urine

How do you diagnose genital herpes infection?

A swab will be taken from the raw area and then it will be processed in lab. Later it will be examined under microscope.

Does it recur?

Once there is an infection with genital herpes, it is going to stay in the body forever. Though the clinical presentation is the same, symptoms will be minimal or none. It tends to resolve spontaneously in 3-5 days. After the primary episode subsides, one

can get recurrent attacks in the following situations: before menstrual periods, physical trauma, mental stress, fever, and infections

What is the best time to treat (genital) herpes?

Within 24 hours of the onset of skin rash is the best time to treat herpes. Within 72 hours of onset of skin rash is also a good time to treat herpes. Usually, treatment will not be effective if it is started after 72 hours of the onset of skin rash.

Is there a cure for herpes?

No. There is no cure for herpes. The disease can only be controlled with medication.

Is partner treatment compulsory?

No. Partner need not be treated unless the partner also has similar symptoms.

How to reduce the pain associated with genital herpes?

- Apply an ice pack wrapped in a towel directly onto the sores
- Wear loose-fitting clothes
- Drink plenty of water.
- Further, seek treatment from doctor.

How to treat genital herpes?

For the primary episode, anti-viral medication (such as acyclovir) is given for 5-7 days. Treatment may not be necessary for recurrent episodes if there are no complaints.

Gonorrhoea

List of common queries and questions by patients/parents:

What is gonorrhea?

Gonorrhoea is an STI caused by the bacteria *Neisseria gonorrhoeae*. It is a health concern as it is sometimes difficult to treat with antibiotics.

What are the risk factors for gonorrhea?

- Unprotected vaginal or oral or anal sex
- Sex with a partner who has gonorrhoea
- Multiple sex partners
- New sexual partner
- Past infection with gonorrhoea

What are the presenting complaints for gonorrhea?

Ten per cent of males and 50% of females do not have any symptoms. Depending on the part of the body involved, symptoms develop. The vagina, cervix (neck of the womb), urethra(urine passage tube), anal (faecal matter passage tube) area or throat can get involved.

In females, there can be abnormal vaginal discharge (thin, watery and yellow or green), spotting between periods or heavy periods, burning while passing urine, and pelvic (lower tummy) pain

In males, there can be white, yellow or green discharge from the penis, pain or burning sensation while passing urine, painful or swollen testicles

In both males and females, the anal symptoms include anal itching, discharge, soreness, bleeding, and painful bowel movements

Throat and eyes may also get involved in both males and females

What are the tests to be done to confirm gonorrhea?

Urine test - The first part of the urine sample has to be collected in a sterile container after not having urinated for an hour or two.

Cervical swab test in females - A doctor or nurse can collect the cervical swab. The urethral swab-by doctor or nurse-swab will be taken from the pipe (urethra) through which urine passes. A retest is needed two weeks after treatment to check whether or not the treatment has been successful. Other tests too will be advised along with urine test. (Eg., HIV, HBsAg etc.,)

When will the symptoms reduce?

Symptoms reduce within a week, though pelvic pain and pain in the testicles may take up to 2 weeks to subside. If it does not improve, you will have to meet your physician.

What is the significance of diagnosing gonorrhea in a pre-pubertal child?

It signifies sexual abuse. Perinatal acquisition and rare vertical transmission have to be excluded before coming to the conclusion of sexual abuse. Sexual abuse has to be reported to the local governmental body which is authorized to receive suspected child abuse or neglect reports.

How do you treat gonorrhea?

One single injection with Ceftriaxone will cure the disease.

What will happen if gonorrhea is untreated?

If not treated, it can cause damage to organs, infertility in males and females, lower abdominal pain due to pelvic inflammatory disease in females, ectopic pregnancy in females, and life-threatening severe bacterial infection. An infected pregnant mother can pass on this infection to her child, leading to blindness or a blood infection that can lead to death.

Chlamydial infection

Common queries and questions by patients/ parents:

What is Chlamydia? How is it acquired?

Chlamydia is a STI caused by *Chlamydia trachomatis*. It is acquired through sexual contact or shared sex toys.

How common is Chlamydia?

Anyone between 15 and 24 years is at high risk of catching Chlamydia. Hence, they should be tested once every three months or with every new partner. If the same partner is maintained, then yearly testing would be sufficient.

What would be the presenting complaints (symptoms) of Chlamydial infection?

Seventy percent of females and 50% of males with the chlamydial infection do not have any symptoms. They will be asymptomatic. Delayed onset of symptoms after a few months can also happen.

In females, there can be abnormal vaginal discharge, vaginal bleeding between periods or heavy periods, bleeding after sex, pain or burning while passing urine, nausea, fever, pain or discomfort in the tummy while having sex, and rectal (back passage) pain

In males, there can be pain or burning while passing urine, pain or discomfort at the end of the penis, white or cloudy or watery discharge from the penis that's not urine, swollen scrotum (scrotum is a sac that holds testes/balls), rectal (back passage) pain, infection of the prostate, joint pain with swelling (Reactive arthritis), and red eye (Conjunctivitis)

What are the tests to be done to confirm Chlamydia?

In females, urine test (collected by patient) and vaginal swab can be done by self or doctor or nurse as explained above (gonorrhea section). This swab can be placed about 5cm in the vagina and rotated for a few seconds to obtain vaginal secretions.

In males, as explained above, urethral swab and urine test are done. In the case of oral sex or anal sex, the doctor will take a throat (food passage pipe) swab or rectal (back passage) swab.

Does my partner need to be treated?

Compulsorily yes. All the other sexual partners within the past six months should also be tested for Chlamydia. If your partner does not get treated after diagnosing Chlamydia, then this infection can be passed back to you again after you get treated.

What are the complications of untreated Chlamydia?

- Persistent pelvic (lower abdominal or below tummy) pain due to pelvic inflammatory disease (PID).
- Difficulty becoming pregnant (infertility).
- Pregnancy outside the womb (Ectopic pregnancy)
- Pregnancy complications like miscarriage, premature birth and stillbirth are increased in pregnant women with untreated Chlamydia.
- Untreated Chlamydia during childbirth leads to the newborn developing a chlamydial infection of the eye or lung during birth.
- Reduced fertility in a few male patients.
- Painful swollen joints (reactive arthritis) in both males and females.

What is the significance of diagnosing chlamydia in a pre-pubertal child?

It signifies sexual abuse. Perinatal acquisition and rare vertical transmission have to be excluded before coming to the conclusion of sexual abuse. Sexual abuse has to be reported to the local governmental body which is authorized to receive suspected child abuse or neglect reports.

How do you treat chlamydial infection?

Treatment should be started immediately soon after Chlamydia is diagnosed without any delay. Timely treatment cuts down the risk of long-term sequelae. These include one tablet of doxycycline twice a day for a week or azithromycin one tablet single dose

Non-Specific Urethritis (NSU)

Common queries and questions by parents/patients:

What is Non-Specific Urethritis (NSU)?

NSU is inflammation of the urethra (urine passage pipe) caused by bacteria other than Gonococci. Nearly 50% of males with NSU were also found to have Chlamydia.

How does NSU develop?

NSU can develop due to urethral trauma from intense sexual activity or masturbation or inserting objects in the urethra, infection with Herpes, sensitivity to chemicals found in condoms or scented soaps, and previous STI.

What are the presenting complaints?

These develop 2-4 weeks after contact. These include burning or pain while passing urine, white or cloudy discharge from the penis, urge to pass urine more number of times, itching or irritation at the tip of the penis, and discharge from the vagina in females

What test will be done?

Vaginal swab and urine test as explained above.

What happens if NSU is left untreated?

If left untreated, NSU can lead to painful infection in the testicles, difficulty getting pregnant (infertility), joint involvement (reactive arthritis), and pelvic inflammatory disease.

How to you treat NSU?

Oral antibiotics are the usual treatment. In some males, it might take double the time to cure occasionally. Partner treatment is required. Few people don't have any complaints. Still, they can pass the infection to others through the sexual route.

Genital Warts

Common queries and questions by patients/parents:

What are genital warts?

Genital warts are painless cauliflower-like growths over the genitals and anal area caused by the Human Papilloma Virus (HPV). There are over 100 varieties of HPV.

What are the presenting complaints of genital warts?

They are usually asymptomatic. Sometimes warts may cause itching and may get inflamed. They may cause bleeding from the anus or urethra.

How do genital warts spread?

They spread through sexual contact and close skin-to-skin connection. Hence, a condom cannot protect wholly from this infection. Warts can still develop over areas other than the area covered by a condom.

After having sex with a person with genital warts, when will the same appear in the partner?

In 3 weeks to few years after getting in contact with the virus, genital warts develop. The virus may not always present with cauliflower-like growth and will disappear by itself.

How long will warts take to disappear with treatment?

It may take anywhere from a few weeks to a few months.

What is the relation between genital warts and cervical cancer?

From 9-year old onwards, girls are offered HPV vaccines to protect them from cervical cancer. This vaccination may aid in preventing genital warts.

How do you treat genital warts?

The dermatologist will apply creams or liquids externally over warts.

Bacterial Vaginosis

Common queries and questions by parents/ patients:

What is bacterial vaginosis?

Bacterial vaginosis is a bacterial infection caused by the decrease of normal bacteria (lactobacilli), an increase of other bacteria and an alteration in p H of the vagina towards the alkaline side. (Normally vagina has acidic p H)

What are the presenting complaints?

It may be asymptomatic in many females. It may present with abnormal vaginal discharge or with a fishy odour.

What are the risk factors?

- Using vaginal deodorants
- Strong washing powder
- Using scented soaps or bubble bath
- Smoking
- Semen in the vagina

What test will be done to diagnose?

Vaginal swab and urine test as explained above.

Is there any simple method to suspect bacterial vaginosis?

Yes. Production of fishy odour on contact of ordinary soap (most of the soaps are alkaline) with genital discharge is a simple sign to suspect bacterial vaginosis.

What happens if bacterial vaginosis is left untreated?

It will resolve spontaneously. But it tends to come back again. It can lead to pelvic inflammatory disease.

How do you treat bacterial vaginosis?

Oral antibiotics are prescribed commonly. External application of creams will also be recommended.

Trichomoniasis

Common queries and questions by parents/patients:

What is Trichomoniasis?

It is an infestation caused by a parasite, Trichomonas vaginalis which lives in the vagina and urethra in females and urethra in males.

How does the infestation spread?

It spreads through sexual contact and the sharing of sex toys.

What are the presenting complaints?

Fifty per cent of males and females will not have any complaints. In the rest, it may manifest as soreness of vagina, itching of the genitalia, abnormal vaginal discharge, and pain or burning while passing urine

In males, there can be abnormal discharge from the penis, pain or burning while passing urine, and redness of the foreskin

What tests will be done?

- Vaginal swab and urine test as explained above.

What is the significance of diagnosing trichomoniasis in a pre-pubertal child?

It signifies sexual abuse. Perinatal acquisition and rare vertical transmission have to be excluded before coming to the conclusion of sexual abuse. Sexual abuse has to be reported to the local governmental body which is authorized to receive suspected child abuse or neglect reports.

How do you treat trichomoniasis?

Oral antibiotics are the treatment. While taking this treatment and for two days afterwards, you should abstain from alcohol as it can react adversely with the antibiotics.

Vaginal candidiasis

Common queries and questions by parents

What is vaginal candidiasis?

It is a fungal infection caused by organisms which are harmless initially but change to harmful nature due to certain body conditions. It is also known as thrush.

What are the presenting complaints?

In females (Vaginal candidiasis), it manifests as genital itching, redness, soreness, abnormal vaginal discharge, which may look like curdy white precipitate, pain or burning while passing urine

What are the risk factors for developing vaginal candidiasis?

- Diabetes mellitus
- Usage of broad-spectrum antibiotics for a long time
- Chemotherapy
- Vaginal irritants like intimate washes, deodorants, perfumed bubble baths
- Stress in some people

Can candidiasis occur in boys?

Yes. It can occur in boys when it can present with itching, redness, soreness, irritation, burning under the foreskin and tip of the penis, curdy white discharge under the foreskin, and difficulty in pulling back the foreskin or phimosis

What test will be done?

Vaginal swab as described above.

How do treat vaginal candidiasis?

Externally applied creams, pessaries or oral tablets will cure candidiasis. Blood sugar control is very much essential to cure this condition. Within a few days after starting treatment, symptoms will get cured.

Scrotal Swelling

Common queries and questions by parents/patients:

What are the causes of painful scrotal swelling in the pediatric age group?

The scrotum is the pouch that holds the two testicles in males. Infection of the tubes near the testicle that store sperms is epididymitis. Painful scrotal swelling can be due to epididymitis. Bacteria often cause epididymitis. It presents a sensation of heaviness, pain and swelling in the scrotum. In young boys, it may be due to urinary tract problems. In older boys, it may develop due to STIs like Chlamydia and gonorrhoea due to unprotected sex.

How is scrotal swelling diagnosed in a child?

Based on symptoms, physical examination (of the abdomen (tummy), scrotum and testicles), urine test, ultrasound, scrotal swelling will be diagnosed.

How do you treat scrotal swelling?

Once the cause of scrotal swelling is established, administration of oral antibiotics should be able to cure the condition

Pubic Lice

Common queries and questions by parents/patients:

What are pubic lice?

These are parasites that live over pubic hair. These are different from head lice. These insects look like crabs. Hence, they are also called crab lice. Eggs are called nits. Nits attach themselves to the coarse hair of the pubic area. These may sometimes be found on under arm hair, leg hair or beard hair.

How does the infestation spread?

It spreads through close skin-to-skin contact or sexual contact. These lice can neither fly nor jump nor live outside the human body for more than 24 hours.

What are the presenting complaints?

Itching and irritation in the pubic area

Undergarments show black stains of droppings from lice

Pubic lice or brown eggs can be seen attached to pubic hair

Light blue spots or a few specks of blood can be seen over pubic skin

What tests will be done?

The doctor or nurse will do a physical examination for any lice or eggs attached to the pubic area.

Is partner treatment necessary?

Yes. Partner treatment is necessary.

How do you treat pubic lice infestation?

The doctor will prescribe a cream, lotion or shampoo for three days to a week. Resistance to any of these drugs may mandate multiple treatment cycles. It is recommended to wash clothing, bedding and towels in hot water (50^0 C or higher) as lice can live in these for up to 24 hours.

Human Immunodeficiency Virus (HIV) infection

Common queries and questions by patients/parents:

What is HIV?

HIV is a virus (Human Immunodeficiency Virus) that weakens the immune system. Thereby the body cannot fight infections.

How does HIV spread?

It spreads through blood, vaginal fluid, semen, unprotected vaginal, anal or oral sex, sharing of sex toys, sharing needles or syringes. HIV can spread from the mother to the child during pregnancy, delivery, or breastfeeding.

What are the presenting complaints?

Several weeks after the infection, flu-like illness develops fever, a rash over the body, muscle pains, joint pains, swollen glands, sore throat, and ulcers. But many people may not have any complaints.

What tests will be done?

Soon after unprotected intercourse with an HIV-positive person, antibodies may not form. Hence, a blood test for 'p24' antigen testing will be done. This initial phase during which antibody tests are negative for HIV infection in the body is called the

window period. During the window period, antibody tests will be negative. But antigen tests may still be positive during the window period. After the window period is over (window period lasts for three months), antibody tests will also be positive.

What is the cost of these tests?

Antibody tests are done free of cost at all government hospitals. Antigen tests will be done free of charge at all ART centres (government-approved free HIV therapy centres) only in HIV-positive individuals to calculate viral load before initiating therapy. Anybody suspecting HIV can walk into any of these government testing centres and get free antibody tests done. The result will be provided on the same day or the next day.

How long should the treatment be taken?

Treatment for HIV should be taken life-long.

What will happen if HIV is left untreated?

It can have long-term effects and can lead to death. Though there is no cure for HIV, the disease can be controlled well with ART, and people can have an improved quality of life.

What is the significance of diagnosing HIV in a pre-pubertal child?

It signifies sexual abuse. Perinatal acquisition, vertical transmission, blood transfusion, needle stick injury have to be excluded before coming to the conclusion of sexual abuse. Sexual abuse has to be reported to the local governmental body which is authorized to receive suspected child abuse or neglect reports.

How do you treat HIV infection?

Having unprotected sex with an HIV-positive (or retroviral disease-positive) person can make you eligible for post-exposure prophylaxis (PEP) within three days of sex.

Anti-retroviral therapy (ART) is given free of cost at all ART Centres. Treatment will be dispensed for a month in the form of tablets packed in a bottle. Monthly visits are necessary to continue treatment lifelong. ART has changed the HIV disease from a fatal infection to a manageable one. ART delays the onset of the late stage of HIV and thereby improves the quality of life of retroviral disease-positive patients.

Chapter 17 - Pediatric & Adolescent Acne – A Stich In Time Saves Nine

Dr Krina Patel, Dr Pooja Desai

On a busy day in my out-patient clinic, a 14-year-old boy was accompanied by his parents for pimples over face. The parents were concerned about skin lesions causing pigmentation and scarring over face. They tried multiple home remedies and OTC products but lesions were not improving. The boy had a habit of eating junk foods almost every day and his weight was 75 kg. He also complained of teasing and bullying at school by his classmates, and preferred to skip school for this reason. Before the parents could say anything, he himself asked me many questions

What are pimples/acne?

Why dose acne occurs at teen age? Does acne affect only teenagers?

What is the role of Hormones in acne?

Can acne be the result of blood impurities?

What are the triggering factors for acne?

Does diet play any role in acne?

Are blackheads and whiteheads are different from acne?Can acne occur over back and chest?

Is there any role of psychiatric counselling in acne?

How do we treat acne?

What are pimples/acne?

Acne is a chronic inflammatory disease of the pilosebaceous unit (pilosebaceous unit contains hair follicle and sebaceous gland). The face, back, chest and upper arms are the most frequently affected sites. Acne lesions can vary significantly from mild comedonal acne to fulminant acne lesions with systemic symptoms like fever and malaise. Acne is one of the most common skin diseases worldwide. The highest prevalence of acne occurs during adolescence period ; around 80% teenagers are

diagnosed with it. Acne most commonly presents between the ages of 10 and 13 years in both sexes. Acne in female begins at a younger age than in males owing to earlier puberty in female. Most of the acne patients have no underlying abnormalities.

Why dose acne occurs at teen age or adolescent age?

Spurt in the level of hormones during puberty correlates well with the onset of acne in adolescence.

Does acne affect only teenagers?

No, acne can occur at any age from neonates to adults. Acne in neonates upto 4 weeks of age is a self-limiting disease due to influence of maternal hormones and also relatively large adrenal gland secreting androgens in babies. Neonatal acne is more common in boys and presents as comedones (blackheads/whiteheads). Infantile acne appears at age of 3-6months and polymorphic lesions are seen including comedones, papules, pustules etc. They may be due to various other causes like oil and other topical applications apart from over functioning adrenal glands. Virilizing tumors may need to be ruled out in cases of severe neonatal or infantile acne. Otherwise, acne in these age groups is self-limited and can be treated by topical anti-acne therapies.

Different types of Pediatric Acne according to age

Types	**Age**	**Lesions**
Neonatal	4-6 weeks	comedones
Infantile	3-12 months	Papules and pustules and scars
Childhood	1-7 years	**comedones**
Prepubertal	7-11 years	

Adolescent	12-19 years	comedones,Papules,pustules, cysts and scars

What is the role of hormones in acne?

Androgens or sex hormones are the main hormones related to acne vulgaris. Androgens are produced both outside the pilosebaceous unit, mainly by the gonads and adrenal glands, and locally within the sebaceous gland via the action of androgen-metabolizing.

Can acne be the result of blood impurities?

No, acne is not caused by blood impurities. It caused by over sebum production, androgenetic hormones and bacteria residing in hair follicles.

What are the triggering factors for acne?

Hot and humid climate can aggravate acne due to increased sweating causing ductal hydration. Emotional stress plays a significant role in the aggravation of pre-existing acne. External application of oils, pomades, and other comedogenic chemicals cause acneiform eruptions.

Does diet play any role in acne?

Diet has recently gained attention regarding acne vulgaris. A high-glycemic load carbohydrate diet induces hyperinsulinemia which results in androgen synthesis, similar to what is seen in polycystic ovarian disease (PCOD). Milk and dairy products consumption were correlated with prevalence of acne. Though, there is no scientific proof regarding any diet role in acne formation, but there is relation between high-sugar/high-fat diet can increase sebum production and promote inflammatory responses in the body –which can lead to acne.

Are blackheads and whiteheads different from acne?

Blackheads and whiteheads are same as acne, which is commonly known as pimples. Pimples can be blackheads, whiteheads, pustules, nodules, cysts and sinuses.

Can acne occur over back and chest?

Yes, acne can occur over face, back, chest, shoulders, arms and gluteal region where oil glands are similar as in face skin.

When do we need to investigate a patient with acne?

Generally, no elaborate investigations are needed but patients reporting an abrupt onset should be further questioned to rule out any symptoms of androgen excess. Females with severe acne of sudden onset with or without hirsutism or irregular menses should be investigated for hyperandrogenism. Acne resistant to conventional treatment and associated with signs and symptoms of metabolic syndrome should be investigated for insulin resistance and other hormonal imbalance.

Is there any role of psychiatric counseling in acne?

Yes, the presence of acne can negatively affect quality of life, self-esteem, and mood in adolescents. Acne is associated with an increased incidence of anxiety, depression, and suicidal ideation. The presence of these and other comorbid psychological disorders should be considered in the treatment of acne patients when appropriate. A strong physician-patient relationship and thorough history taking may help to identify patients at risk for the adverse psychological effects of acne.

How do we treat acne?

The treatment options for acne vulgaris is divided into topical therapy , systemic therapy, physical modalities and counselling.

ACNE TREATMENT	
Topical treatment	**Antibacterial and Anti-inflammatory**: Benzoyl peroxide (2.5-5%), clindamycin(1%), azelaic acid (10%-20%). **Comedolytic agents:** Tretinoin (0.025%, 0.04%, 0.05%, 0.1%), adapalene (0.1%), and tazarotene (0.05%).
Oral/ Systemic treatment (undersupervision of a dermatologist)	**Antibacterial and Anti-inflammatory:** Doxycycline (100-200 mg daily), Minocycline (45-100mg/day), , and azithromycin (250-500mg three times weekly). **Oral retinoids**: Isotretinoin (0.3-0.5 mg/kg/day). **Hormonal therapy:** contraceptive pills, cyproterone, spironolactone, flutamide.
Physical Modalities	Comedone extraction, intralesional corticosteroids, Laser and light therapy, acne and acne scar surgeries.
Newer Therapy	Topical : trifarotene (retinoids), sarecyclin (antibiotics), Clascoterone (topical androgen inhibitor). Physical modalities : micro needling with radio frequency (MNRF)

Acne treatment is usually safe with minimal side effects. Treatment with oral/topical retinoid causes mild dryness and sometimes irritation. Oral antibiotics may cause gastric upset in some patients.

Patients should follow below instructions:

- Consult Dermatologist
- Follow the treatment advice by the dermatologist
- Proper application of topical preparations as per advice.
- Photoprotection
- Use of mild cleanser for cleansing.

Patients should avoid following things:

- Do not apply home remedies, oils, pomades and heavy cosmetics.
- Don't rub your face.
- Don't prick/ excoriate/ pop out acne.
- Don't use harsh soap.
- Avoid chocolate, spicy foods, junk foods, and cola beverages.

Myths (M) Facts (F) About Acne :

M: It's OK to pop your pimples safely.

F: This is never a good idea. Squeezing your pimples triggers inflammatory responses and can introduce even more bacteria to your zit. It also can cause acne scars which don't go away.

M: No treat is required for acne, it will go off on own

F: Acne is a self-limiting condition in the majority of patients, but it should be treated properly. Because acne leads to permanent scarring, pigmentation, poor facial aesthetics and psychological impact like depression, anxiety, lack of self-esteem and socially withdrawn. Hence

proper treatment of acne decreases these complications and improves quality of life.

M: Toothpaste and other home remedies can clear a pimple.

F: Toothpaste and other household items are not safe on your skin. The fluorides in toothpaste can even worsen acne. Lemon causes burning and irritation to skin.

M: Exfoliate as much as possible.

F: Scrubbing your face really hard doesn't just wash acne away. If you end up scrubbing too hard, it can inflame your acne, making it even worse.

M: Acne only affects people with oily skin.

F: People with all different skin types suffer from acne. All skin types can develop whiteheads, blackheads and pimples.

M: You need to wash your face more.

F: Washing your face more often won't cure your acne. Try to wash your face twice a day, but more than twice daily may do more harm than good. Washing your face is helpful to decrease the bacteria, but you shouldn't overdo it. It will cause irritation.

M: Blood purifiers can help clear acne and purify skin

F: Acne happens because of the bacteria called Propionibacterium acnes and also due to hormonal imbalance. It has nothing to do with pure or impure blood.

M: People with a lot of heat in their body are more likely to get acne

F: Infections, fever, thyroid disorders, exercise, etc. can all cause the body heat to increase. It may cause rashes or prickly heat, but it does not cause acne.

M: Acne occurs only on the face

F: Acne can occur wherever the Sebaceous glands exist. It can be the face, back, chest, arms, shoulders, and buttocks

M: Blackheads and acne are not the same

F: Blackheads are another form of acne or pimples. Pimples are just a layman's term for acne. Acne includes cysts, blackheads, pustules, nodules, and whiteheads