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Efficaciousness Of Homoeopathy In Management Of Keloid

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ABSTRACT

Keloid are abnormal disfiguring scars which are theorized to form as a result of disturbances of normal balance between an increased synthesis of collagen and extracellular matrix and reduced degradation of these products. Keloid are yet considered a difficult task for the doctors to treat as there is an high probability of their recurrent growth and extension. The hypothesis for keloid formation is the dysregulation of collagen remodelling by inflammatory mediators like transforming growth factor beta, interlukin-1,6, tumour necrosis factor and vascular growth factor during healing of scar. Assessment of scar is mainly based on radiology and clinical approach. Laser therapies, steroids, radiation, anti inflammatory and chemotherapeutic molecules, cryotherapy all these treatment procedures are used for decreasing keloid symptomatology and its regrowth; but yet there are no standardized treatment protocols for keloid. Homoeopathy on the other hand has been proved beneficial in treating keloid formation and its regrowth without having any adverse effect to body as well as proved cost-effective comparison to others modes of treatment available.

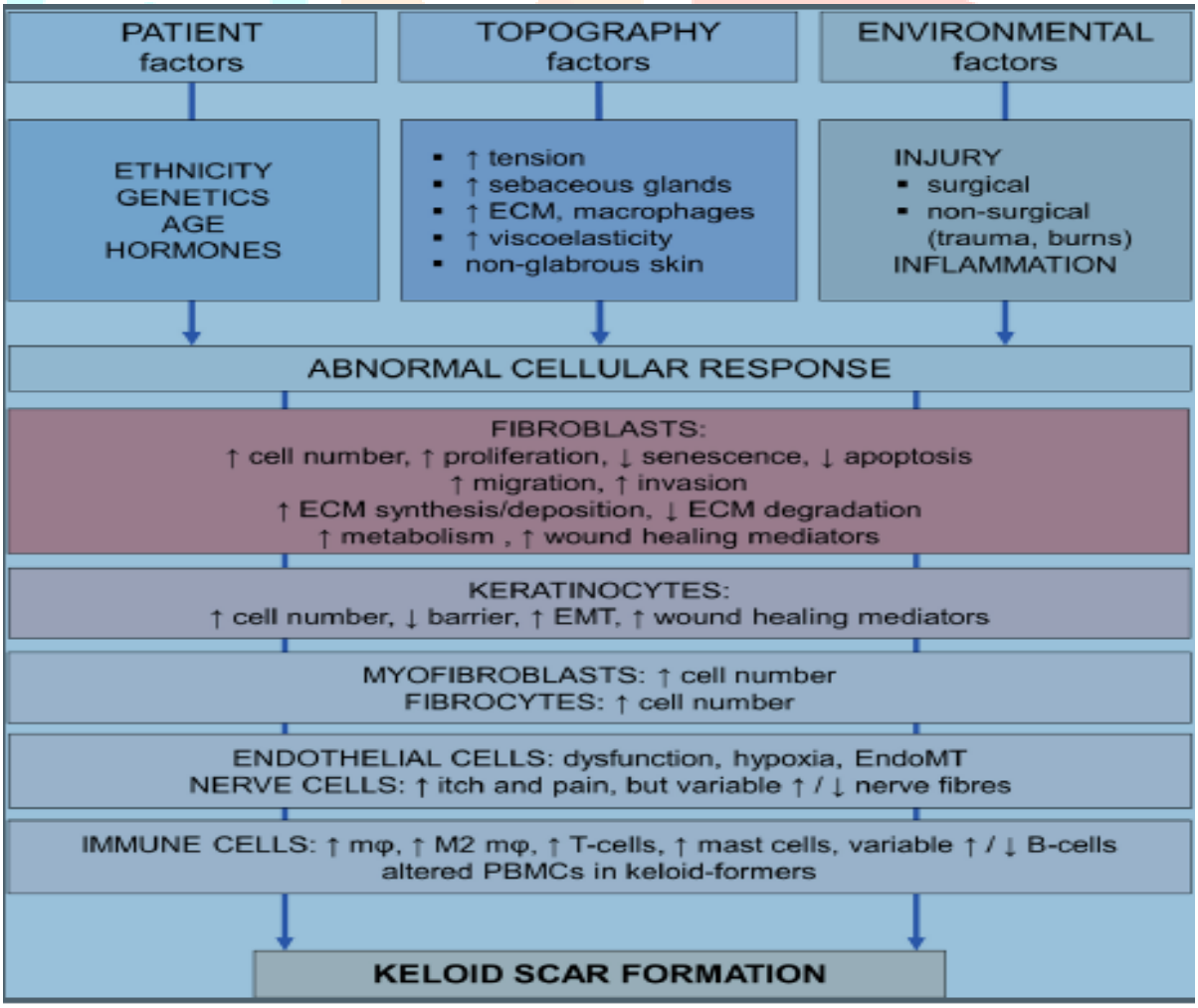
KEYWORDS: Keloid, collagen, scar, Homoeopathy.

INTRODUCTION

The subsistence of keloid is as early as round about 3000 B.C.,or 1700 CE in the elucidation of a "*swelling on his breast, large, spreading, and hard,"* which felt like "*touching a ball of wrappings*" in the Edwin Smith Papyrus, the first known surgical treatise describing ancient Egyptian medical practice (Breasted, 1930; Berstein and Roenigk, 1996). [1] Around 19th century, Jean Louis Alibert, the father of French Dermatology, was the first to describe these tumours –like scars and initally referred them as '*les cancroïdes de la peau'*. After knowing that these cicatrial tumours were non-cancerous; Alibert renamed to '*cheloïde*' or '*keloïde'* in reference to the Greek word for crab's claw and the suffix -oid meaning 'like'[2]. Keloid was introduced in modern medical literature in 1814[3].

A keloid is described as a benign growth of immature fibrous tissue deposition which may appear as elevated, firm bosselated papules over the dermal injury, extending towards border of the wound or injury site which may be caused due to dermal injury or even spontaneous. [4]. Keloid can also arise as ill-defined plaques with different colour variation and erythematous, violaceous or brown pigmentation[5].. The formation of keloid is influenced by many factors as environmental, topological, and patient related factor. Risk factors of keloids comprises people with blood group A which have a link with spontaneous keloids, hypertension as it has positive relation with keloid number and size, melanin pigment level in cells which is directly proportional with incidence of keloid formation. Age of onset, sex, delayed healing or healing by secondary intention, anatomical site of injury are also contemplate as risk factors for keloid formation[6]. Patient with keloid complaint of pain , itching and burning. Keloid with classical histologic findings demonstrate as large, abnormal and hyalinized bundles of collagen which can be referred as keloidal collagen and numerous fibroblast. [7].

- **Etiology**[8,9]



- **Epidemiology**

They are more common in black people than white; Indian peoples are less prone than Africans, Hispanic and American population. The prevalence in general population varies from as high as 16% in Zaire to as low as 0.09% in England.

Keloids are more commonly seen in middle age group compared to children. The incidence is equal in both sexes; but higher during pregnancy and puberty in females. The prevalence is also seen with those of with positive family history and some rare genetic syndromes like Rubinstein-Taybi and Goemine syndrome. [7].

- **Pathophysiology of Keloid**

Standardized wound healing process consist of three time-sensitivity phases which are:

- Inflammatory and haemostasis phase
- Proliferative and fibroblastic phase
- Maturation and remodeling phase

But the pathogenesis behind keloid formation starts when there is abnormal wound healing either due to the inflammatory phase or proliferative phase resulting in the clinical and histopathological findings.[10]

There are many postulation behind the formation of keloid; but the most approved one was that there is disturb balance between collagen synthesis and degradation along with fibroblast proliferation, apoptosis and inhibition. Keloid fibroblast mainly stimulated by inflammatory mediators like transforming growth factor beta-1 (TGF-beta 1) is related to increase collagen synthesis. The main two inflammatory mediators TGF-beta 1 and TGF-beta 2 which trigger activity of fibroblast and production of extracellular matrix collagen in comparison to TGF-beta 3. TGF-beta 1 is also responsible for escalating tissue inhibitors of metalloproteinases and decreasing matrix metalloproteinases which results in extracellular matrix degradation and forms keloid.

The another theory behind the formation of keloid is the deficiency of vitamin D active form and vitamin D receptor in keloid compare to normal skin[6,11]. There are many other different theories behind keloid formation, they are:-

- Raised levels of vascular endothelial growth factor and connective tissue growth factor helps in production of keloid. Studies also shows that elevated vascular endothelial growth factor and decrease endostatin collagen XVIII causes imbalance and form keloid.[6]
- A protein secreted by extracellular matrix involved in angiogenesis called periostin is seen elevated in keloid patients with high blood vessel density when compared to normal skin.[12]
- Normally connective tissue has a proteoglycan named decorin which has role in inhibiting collagen, fibronectin synthesis and angiogenesis. This decorin is seen decrease in patients having keloids.[12]
- Overexpression of receptors of platelet-derived growth factor (PDGF) and insulin-like growth factor 1 (IGF-IR) are behind the pathogenesis of keloid.[6]
- Interference in apoptosis and proliferation balance in fibroblasts due to loss of gap junctional intercellular communications.[6]
- Decrease fibroblasts apoptosis causes a breach between collagen synthesis and degradation.[6]
- Neighboring cells such as keratinocytes, mast cells, T- helper 2 cells, IL 4, 5, 10 and 13 send abnormal signals that give rise to fibrogenesis and enhance keloid formation.[6]
- Oxygen is required for wound repair; so any hypoxic condition is seen related with formation of keloid in many studies by researchers. Studies shows that central area of keloid is severely ischemic as compared to hypertrophic and normal scars, The centre part of the keloid has less vascular density as well as have hypoxia-induced factor-1 α (HIF-1 α) rather than the keloid peripheral parts.[12]
- Small non-coding microRNAs helps in regulation of gene expression. Researches shows that derangement of these microRNAs are seen in keloids.[12]
- Some theories suggest that there is upregulation of genes of fibroblast in response to inflammation in microenvironment which leads to formation of keloids.[13]
- Keloid contain 60% more triglycerides than the normal skin which suggest that lipid metabolism is related for the inflammatory reaction in keloids.[13]

- **Clinical Features**
  They are indurated, elevated and erythematous lesions having red or violaceous-black colour. Their growth is mostly horizontal beyond the margins of the original wound with a continued growth. Keloids are of many shapes like butterfly, mushroom or cauliflower depending on the site of body and exciting factors. They are mainly asymptomatic but sometimes have throbbing , sharp needle like pain, burning sensation, hyperaesthesia and itching are present which is due to inflamed epidermal cyst arising in the scar tissue. They are mostly seen at shoulders, chest, neck, upper arms and cheeks but some rare conditions they can also occur at eyelids, genitalia, palms, soles, cornea or mucous membranes. On physical examination, they appear as well-circumscribed, firm, irregular bosselated, pink and purple lumps. They can also have hyperpigmentation with glossy surface and sometimes with telangiectasias.[4]

- **Histopathology of keloids**
  Compared to the normal scar tissues, keloids contain a normal epidermal layer, ample vasculature, elevated mesenchymal density, thickened dermis and raised inflammatory cell- infiltrate. Keloid have excess thicker, unordered collagen appearing as a acellular nodelike structures in deep dermal region. The most characteristic features of keloid on histopathological examination are the presence of large, broad, closely arranged collagen fibres made up of numerous fibrils. Keloid also contain large amount of proteoglycans as extracellular components. Four main histologic characteristics are always pathognomonic for diagnosis of keloids, they are-
  - Keloidal hyalinized collagen is present.
  - Presence of a tongue like advancing edge beneath the normal appearing epidermis and papillary dermis.
  - Keloid contain horizontal cellular fibrous bands in the upper reticular dermis.
  - Notable fascia like fibrous bands.[14]

- **Differential diagnosis of Keloid**[15]
  Some cutaneous lesion may be misdiagnosed as keloid. Biopsy of the lesion and histopathological examination are necessary for proper diagnosis. The differential diagnosis of keloids are:-
  a. Chondroid syringoma
  b. Dermatofibrosarcoma protuberans
  c. Cutaneous squamous cell carcinoma
  d. Juvenile xanthogranuloma
  e. Pseudolymphoma
  f. Nodular scleroderma also known as keloidal scleroderma or keloidal morphea.
  g. Lobomycosis. It is a chronic fungal infection of the skin and subcutaneous tissue occurring in tropical areas of Latin America. It is also called as keloidal blastomycosis, lacaziosis and Lobo's disease.
  h. Hypertrophic scar
  i. Trichilemmal carcinoma
  j. Keloidal basal cell carcinoma
  k. Nodular contact dermatitis
  l. Cutaneous sarcoidosis
  m. Atypical mycobacterial infection
  n. Spitting suture, suture abscess and suture granuloma
  o. Leiomyoma
  p. Dermatofibroma
  q. Xanthoma disseminatum

- **Investigation and Diagnosis**[16]
  - Pneumatonometer and cutometer are use to evaluate pliability.
  - Chromameter is use to evaluate colour.
  - Laser Doppler perfusion imaging is used to analyse perfusion.
  - Durometer is use to judge firmness.
  - Tissue ultrasound palpation system is use to assess thickness.
  - 3-dimensional topography is use to evaluate characteristics of scar surface.
  - Color Doppler Ultrasonography is used to keloid to evaluate the vascularity, thickness, volume, presence of blood flow showing type of vascularity.
  - Biopsy of the lesion.
  - Fearmonti et al established some semi quantitative methods using scales to distinguish between hypertrophic scars, other lesion from keloids. These scales are: Vancouver Scar Scale (VSS), Manchester Scar Scale (MSS), Patient and Observer Scar Assessment Scale (POSAS), Visual Analog Scale (VAS), The Japan Scar Workshop (JSW) 2015 Scar Scale (JSS 2015) and Stony Brook Scar Evaluation Scale (SBSES).

- **Treatment**[17]

Keloids are always were difficult to treat and without proper, incomplete therapy it can also lead to worsening and growing of keloid. The treatment for keloids are listed below:-

i. Compression therapy is use to decrease keloid development using the pressures of 15 to 45 mmHg recommended for more than 23 hours per day for at least 6 months.
ii. Corticosteroids
iii. Cryotherapy
iv. Surgical excision
v. Radiotherapy
vi. 585 nanometers (nn) pulse-dye laser and 1065 nm neodymium-doped yttrium aluminum garnet (ndYAG) laser
vii. Topical imiquimod following excision
viii. Intralesional botox,
ix. Intralesional bleomycin,
x. Intralesional 5-fluorouracil,
xi. Silicone gel sheeting
xii. Adipose tissue transplantation
xiii. Mesenchymal Stem Cells (MSCs) therapy
xiv. Fat grafting
xv. Ultraviolet therapy

- **HOMOEOPATHIC MANAGEMENT OF KELOID** [18,19.20]

Homeopathy is always seen to be effective in many skin disease .The proper treatment of hypertrophic scar, keloid, post-surgical scar and post –burn scar is available in the literature. Homoeopathic medicines use for the management of keloids are-

a. ***Calendula officinalis***- The medicine has been remarked as a great healing agent whether used externally or internally. It promotes the formation of healthy granulation tissues and thus fastens the healing process. Compare to injury pain is out of proportion. Fastens the cicatrisation and causes leases amount of suppuration. Keloids with raised edges especially after burns post- surgery, scalds and skin injuries due to accidental trauma Aggravation in damp, heavy and cloudy weather.

b. ***Carcinosinum***- It is a nosode first prepared from breast cancer by Foubister. It is mainly use as an intercurrent remedy. Suited to persons who have hereditary tendency of cancer with suicidal thoughts. Keloid. Worse from physical exertion, sea-bathing and washing. Symptoms appear on alternating sides. It has been used to prevent the formation of keloids.

c. ***Causticum***- Suited to dark –complexion people who have rigid –fibres and hydrogenoid constitution. It has its action on tendinous contractures. Keloids having burning, soreness and rawness is the characteristic symptoms. Keloids after burns and old injuries which reopen again with dirty white skin.

d. ***Cupressus Lawsoniana*-** It is derived from the leaves and berries tincture. It is proved in fragment by William Henry Burnett and he consider that it has similar action of Thuja and Sabina, hence use in cases of tumours, lipoma and keloids.

e. ***Fluoricum acidum*-** It has its action on lower tissues with disease which are chronic and have syphilitic and mercurial history. Keloid and old cicatrices which are red at the edges and have violent itching and are < warmth and > in cool places and cold application. The keynote of this medicine is destructiveness. Desire of pungent, spicy food with thirst of cold water. Keloids with dry, harsh and cracked skin. Peculiarity of the medicine is " a constant, irresistible desire to walk in open air and does not have fatigue".

f. ***Graphites*-** Belong to the carbon family, it is a great anti-psoric remedy and has a tendency to develop the skin stage of internal disorders. It can helps in absorption of cicatrial tissues. It is mainly use in early stages of fibroma and keloids. It halt the progression of keloid and helps it dissolve completely. Suited to stout, have fair complexion, fat , chilly, costive and have tendency of constipation and delayed menstrual history. Aggravation in warmth, at night and better from wrapping up.

g. ***Nitric acid*-** Whenever it comes in contact with skin it destruct its upper layer ,turns yellow and coagulates their albumen and form a barrier against it their own action It has its action where the mucous membrane and skin meet on the outlets of the body with pains. It is suited to people of dark –complexion and hydrogenoid constitution. Keloid with splinter-like pains and irregular edges and itches on undressing. In ancient times it was used as an escharotic and irritant poison. Nitric acid covers all three miasms. Suited to patients who have debility, trembling, shivering, sensitivity and soreness. It has splinter –like pains which appears and disappear quickly. Suited to lean persons of dark , swarthy complexion , black hair and eyes, take cold easily and disposed to diarrhoea. Amelioration from motion, riding in a carriage and pressure. Aggravation from slight touch, milk, fat food, cold air, dampness, change of weather, heat of bed, loss of sleep, evening and night.

h. ***Silicea*-** Suited to nervous, weakly , irritable persons having dry, fine skin, pale face light complexion, lax muscles, profuse salivation, diaarhea and night-sweats. Physically and mentally oversensitive. The main indication for prescribing this medicine in homoeopathic practice is "Want of grit, moral or physical". It has its action on connective tissues resulting in new growth, ulceration and suppuration. It has its action on nerves producing sensitivity to nervous stimuli and increased reflexes. The medicine helps in reabsorbing fibrosis and scar –tissues. Amelioration in warm room, from warm covering and magnetism. Aggravation from change of weather, cold air, damp, uncovering, touch, pressure, at new moon, increasing moon and full moon. Keloids with suppuration. Ill effects of vaccination. J.H. Clarke also wrote about the medicine while describing a case of recurrent keloids.

i. ***Thiosinaminum*-** A chemical derived from mustard oil seed which act as a resolvent. It can be use both externally and internally to dissolve scar tissues, tumours , glands , lupus, strictures and adhesions with heat and burning sensation. It also dissolve cicatries of ear and thus help in tinnitus. Stricture of rectum can also be treated with the medicine. Keloid can be treated using this medicine irrespective of its cause.

j. ***Thuja occidentalis*-** Belong to the Coniferae family , this medicine is Hahnemann's greatest anti-sycotic remedy having hydrogenoid constituition. It has action on mucous membrane of genito-urinary tract, intestines, skin, mind, nerves, blood, kidney, brain and glands. It has anti-bacterial action on skin affection. Ill effects of vaccination and tobacco. Never well since vaccination, neuralgia and skin diseases. Adapted to persons having lax muscles, light or black hair, fleshy, dark complexion and unhealthy skin. Worse from cold, dampness, touch, increasing moon, moonlight, after breakfast, eating, tea, coffee, sweets, fatty foods, onions, sex, sun and bright light, Amelioration on left side, warm , wrapping, motion, pressure, rubbing and scratching. Keloid with itching and burning after cold washing. Skin sensitive to touch.

k. ***Vaccininum*-** It is a nosode prepared from the vaccine matter. It is mainly a sycotic remedy. Persons suffering from malaise, torpor and unnatural weakness. Formation of keloids on re-vaccination marks with itching and tingling burning. As explained by Burnett, the aggravation time is mostly in morning.

- **DISCUSSIONS AND CONCLUSION**

Regardless of many years of researches and experiments, the pathogenesis of keloid formation remains an unsolved mystery. The clarification of molecular pathways in keloid formation can bring a lot of scope in future. New studies and researches stipulate that TGF-β2 and PDGF have important contribution in keloid formation. Further advancements in future can help to develop selective inhibitors for TGF-β2 which can prove as a path-breaking tool with great efficacy and preciseness in treatment of keloid. Besides that the prevention of keloid formation have utmost importance and the role of combination therapy in it can prove beneficial over any modalities in keloid treatment. But inspite of all these modern medicines and therapy, prevention and treatment of keloid are a struggle and patients suffer from it by trying all the available option. In such cases, Homoeopathy always validate as the most trusted way in the treatment and management of keloid. Homoeopathic medicines not only dissolve the keloidal lesion but also helps in preventing its formation. The dynamized, controlled doses of homoeopathic helps in restoring the unbalanced immune responses which causes keloid to form. These medicines hampered the growth of excess of fibrotic tissues as well as also dissolve them. Tjis may take some times as the body's immune system has to go back to its normal function and had to stop the process of keloid formation . But the result in absolute dissolve of the keloid as well its prevention from homoeopathy has shown the more beneficial than other options available. Further studies and researches of the homoeopathy in such case helps us to give an idea about the most cost-effective, less invasive method for keloid by Homoeopathy.

Conflict of Interest
Not available

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Not available

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