AN AYURVEDIC OUTLOOK OF KELOID A CRITICAL REVIEW

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ABSTRACT

Keloid is a type of scar, which results from overgrowth of dense fibrous tissue that usually develops after healing of a skin injury. In other words it represents an abnormal scar formation. The tissue extends beyond the borders of the original wound and does not usually regress spontaneously. It causes cosmetic deformities, itching, pain and psychological stress ultimately resulting in compromised quality of life and diminished functional performance. The treatment of Keloid is often difficult and frustrating because of the fact that there is an associated high risk of recurrence. Vrana represent the soul of Shalyatantra and the pathogenesis of Keloid is similar to Vrana granthi which has been explained as a growth of mass at the site of Vrana following dietetic complications or any physical irritation in a Vrana patient.

Key words- Keloid, Scar, Vrana, Vrana granthi**.**

INTRODUCTION

Keloids are benign dermal, fibro proliferative growth, characterized by excessive formation of collagen, without any malignant potential. Keloids represent a pathological response to cutaneous injury resulting in disfiguring scars. Skin injuries as burning, inflammation, surgery or minor trauma as insect bite induce an excessive extracellular matrix (ECM) deposition, especially collagen. The term Keloid derived from the Greek word “khele”, which means crab claw[1]. Keloids can develop at every age but have a higher incidence between 10 to 30 years[2]. Although epidemiologic data are limited, they suggest differences among racial groups with a higher frequency in blacks, Hispanics and Asians[3].

WOUND HEALING

Wound healing[4] is a mechanism whereby the body attempts to restore the integrity of the injured part. It occurs in three stages- the inflammatory phase, the proliferative phase and the remodeling phase. The wound healing process requires a complex interaction between different cell types, ECM, and cytokines.

The inflammatory phase begins immediately after a wound happens and lasts 2–3 days. Bleeding occurs and is followed by vasoconstriction. Platelets stick to the damaged endothelial lining of vessels which causes thrombocytic activity forming the thrombus which arrests bleeding. When bleeding stops, several cytokines including platelet-derived growth factor (PDGF), platelet factor IV and transforming growth factor beta (TGFβ) and vasoactive amines, such as histamine, serotonin and prostaglandins, released from platelets and the local

injured tissue, attract neutrophils and macrophages. Leukocytes bind and ingest most microorganisms and dead cells by means of specific surface receptors.

The proliferative phase lasts from the third day to the third week, consisting mainly of fibroblast activity with the production of collagen and ground substance, neovascularization and the re-epithelialisation of the wound surface. Fibroblasts require vitamin C to produce collagen. The wound tissue formed in the early part of this phase is called granulation tissue. In the latter part of this phase, there is an increase in the tensile strength of the wound due to increased collagen and consists of type III collagen. It is associated with wound contraction.

The remodeling phase is characterized by maturation of collagen i.e. type I collagen replacing type III collagen until a ratio of 4:1 is achieved. There is a realignment of collagen fibres along the lines of tension forming the scar, decreased wound vascularity, and wound contraction due to fibroblast and myofibroblast activity. This maturation of collagen leads to increased tensile strength in the wound which is maximal at the 12^{th} week post injury and represents approximately 80% of the uninjured skin strength. In scarring, the amount of inflammatory cells, endothelial cells and fibroblasts decrease as the healing proceeds. The collagenous matrix becomes more organized into thicker and more cross-linked bundles indicating the development of the mature scar. Scars are histologically characterized by a flattened epidermal-dermal junction and thickened epidermis. The collagen fibres in scars are smaller and show a higher density in packing. Hair follicles and sebaceous glands never regenerate in a scar.

ABNORMAL SCAR

A tightly regulated balance between synthesis and degradation of ECM is essential for normal scar formation. If this balance shifts towards increased ECM production or decreased degradation Hypertrophic scars and Keloids may occur. A hypertrophic scar is defined as excessive scar tissue that does not extend beyond the boundary of the original incision or wound. It results from a prolonged inflammatory phase of wound healing and mainly occurs across the lines of skin tension[5]. Hypertrophic scars improve spontaneously with time.

KELOID

Keloid is defined as excessive scar tissue that extends beyond the boundaries of the original incision or wound[6]. It continues to grow. Its etiology is unknown, but it is associated with elevated levels of growth factor, deeply pigmented skin, familial tendency and certain areas of the body, more common in midline over the sternum, shoulder, lower neck in front and ear pinna[7]. Females have a slightly higher incidence rate than males. The histology of Keloid shows excess collagen; especially more type III collagen with hyper vascularity suggesting the pathology occurs in the remodeling phase.

Clinically, Keloids extend beyond the boundaries of the original wound and rarely regress over time. They often arise immediately after skin injury and appear as firm nodules which are pruritic and painful. Itching is severe when exposed to sweat, dust and other allergens. Initially, they have a pink or red appearance and telangiectasia may be present. Keloids interrupt one's quality of life, for having a feeling of being excluded from full social acceptance.

The treatment of Keloids is difficult and often unsatisfactory. Several treatment modalities have been tried, but most of them have rendered disappointing results, especially when recurrence is concerned. The most commonly used treatments include intralesional steroid injection, interferon, 5fluorouracil, imiquimod and laser

therapy. Primary excision and cryosurgery are among the major surgical options. Radiation therapies and other physical modalities such as silicone gel sheeting and pressure therapy are possible alternatives[8].

VRANA

Vrana and Shalyatantra seem to be inseparable. Vrana and its healing process is the core of Shalyatantra subject. Acharya Susruta explains various aspects of Vrana right from the Sutrasthana.

Nirukthi

The Sanskrit term Vrana is derived from the root *"Vringvarnaswathi"* and *"Vringisamprukthamkriyad"*. The literary meaning of the term Vrana is a scar formed after the healing of wound or an ulcer.

Definition

1. *"Vrana gaatra vichurnane, vranayati iti vranah"*[9]

Gaatra means tissue or part of the body. *Vichurnane* means destruction or break or rupture and discontinuity of the body or tissue. The destruction i.e. break or rupture or discontinuity of the body tissue or part of the body, is called Vrana.

2. *"Vrunothi yasmat rudoapi vrana vasthu na nasyathi*
   Aadehadharanath tasmaat vrana ithyuchyate budhai"[10]

As the scar of a wound never disappears even after complete healing and its imprint remains life long, it is called Vrana by the wise.

3. *"Vivrunothiiti vrana"*

Vrana is that which exposes the internal structure.

4. *"Vranayathi gatram vivarna vaivarnyam karothiithi vrana"*[11]

Vrana is that which causes discolouration at the site where it had happened even after its healing.

VRANA GRANTHI

Vrana patient should follow a strict regime even after healing of ulcer. Vrana granthi is one among the nine granthis explained by Vagbhatacharya. When a vrana patient consumes diets which include all the six rasas without any control amid the ulcer has not healed or just healed; or if vrana is not bandaged when still moist; or afresh injury by stones etc., there is vata dosha vitiation which affects raktadhatu producing Vrana granthi. It is a hard mass associated with burning sensation and itching[12]. It is considered as incurable by Acharya Vagbhata.

DISCUSSION

In Ayurveda, rasa has very important role in treatment. The nidana of Vrana granthi include consumption of diets of all the six rasas which has a major role in its pathogenesis. An evaluation can be made relating the karma of each rasa and its effect in the healing of Vrana. Madhura rasa is sandhanakara and brimhana, but it is abhishyandi. Amla rasa causes paka by its agneya quality and also it vitiates rakta and mamsa. Lavana rasa increases potency of toxic materials, either ingested or metabolic end products in addition to vitiation of rakta and mamsa. Katu rasa cause depression of Vrana along with haemolysis and muscle depletion. Tikta rasa is visada, antitoxic, anti-inflammatory and it reduces pus and moisture. Kashaya rasa promotes healing and pacifies rakta. It is clear that apart from tikta rasa and kashaya rasa, other rasas have adverse effect on healing of Vrana. A wise intake of medicine and diet should be planned for proper healing of Vrana. So along with other nidana, simultaneous consumption of all the rasa in an unbalanced quantity hampers the healing process, aggravates vata and vitiates rakta in addition to the vitiation of kapha, meda and mamsa; which is general in all varieties of granthi, and produce Vrana granthi. Here the rakta vitiation can be regarded as hyper vascularity and vitiation of meda and mamsa as collagen excess constituting the pathogenesis of Keloid.

CONCLUSION

In the current era of dynamic life, people are reluctant to follow wholesome regimes and diets for being healthy. Same is the case of Vrana patient who may develop Vrana granthi. Vrana granthi can be correlated with abnormal scar formation i.e. hypertrophic scars and Keloids; the symptoms being severe in the latter. Vrana vaikrutapaha chikitsa can be incorporated for the treatment of Keloid considering the unsatisfactory results of modern treatment practices.

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