

INTRODUCTION OF GANGRENE AND IT'S MANAGEMENT IN SHALYA TANTRA-A REVIEW ARTICLE

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ABSTRACT

Gangrene is a type of tissue death caused by lack of blood supply. Symptoms may include a change in skin colour red or black, numbness, swelling, pain, ulceration and detachment of local skin. The feet and hands are most commonly affected. This condition may arise because of an injury, infection or other health conditions, majorly diabetes. Gangrene and its associated amputations are clinically challenging, but Ayurveda offers therapy options. In Ayurveda, gangrene can be considered as Kotha under DushtaVrana due to Margavarana and Dhatu Kshaya. Gas gangrene is a rapid spreading infective type of gangrene of the muscles characterized by collection of gas in the muscles and subcutaneous tissue. Gas gangrene is caused by clostridial infection (*Clostridium perfringens*/ *Clostridium welchii*) due to the fact that it is also called as “clostridial myonecrosis.”

KEYWORDS: Gangrene, Ayurveda, Numbness, DushtaVrana, Margavarana, Gas gangrene.

INTRODUCTION

The Sushruta samhita describes in detail the surgical care of patients. Surgically treatable diseases were identified and indications/ contraindications of surgery were described. Designing of a wide range of surgical instruments and their appropriate use is the highlight of Sushruta samhita. Sushruta samhita explains different types of wounds and their management in an elaborated way. Surgical incisions, their alignment, suturing, and dressing are well described.^[1]

In Ayurveda, gangrene can be considered as Kotha under DushtaVrana due to Margavarana and Dhatu Kshaya. Margavarana (encapsulation) and Dhatu Kshaya (depletion of Dhatu) are the two major causative comorbidities of VataVyadhi. The word Marga in general refers to any channels within the body, but, contextually, it refers to the vessels carrying the nutrients and Avarana means Avarodha and is translated as obstruction. Pathological probability of gangrene may be accumulation of morbid Kapha and Pitta Dosha within the channels that the momentum of the VataDosha circulation in the channels or impairment of momentum.^[2] The influence of Margavarana is not limited proximal to the obstruction but distal to the obstruction, the circulation of the nutrients is affected and hence the body part distal to the obstruction is deprived of nutrition and hence suffers from pathology of Dhatu Kshaya.^[3] Leech therapy is becoming increasingly popular among practitioners of contemporary and alternative medicine. Many studies are currently under way to evaluate its effects, mainly in the treatment of pain.^[4] In Europe and the United States, thousands of patients have been healed using leech therapy.^[5] Many traditional medical systems, for example, the Greek, Arab, and Russian, mention leech usage.^[6] The origins of traditional Indian medicine Ayurveda remain unclear, but it is said to date back some 3000 years.

Leech therapy has been an active part of traditional Indian medicine throughout its history Panchatiktaghritguggulu^[7], reference from Bhaishjyarnavalikushtrogadhikara. which is combination of 5 drugs which has bitter taste (tiktarasatmaka). So probable mode of action of Panchatiktaghritguggulu can be considered as, all properties of this drug acts on cellular level of skin decreasing Keratinization of skin layer thus improving cell cycle as a result of these symptoms like Itching, extensive patches, unctuous & raised red color of patches were reduced giving normal texture to skin. Gangrene is a condition that arises when a considerable mass of body tissue dies (necrosis). This may occur after an injury or infection, or in people suffering from any chronic health problem affecting blood circulation. Gangrene is primarily caused due to reduced blood supply to the affected tissues that leads to cell death. Diseases like diabetes and long-term smoking increases the risk of gangrene. It can affect any part of the body but typically starts in the toes, feet, fingers and hands (the extremities).

Types of gangrene

Dry gangrene: Dry gangrene begins at the distal part of the limb due to ischemia (restricted supply of blood), and often appears in the toes and feet of elderly patients due to arteriosclerosis and thus, it is also known as senile gangrene. Dry gangrene is generally seen

due to arterial occlusion. As there is limited putrefaction and bacteria fail to survive, dry gangrene spreads slowly until it reaches the point where the blood supply is adequate to keep tissue viable. The affected part is dry, shrunken and dark reddish-black, like mummified flesh.

Wet gangrene: Wet gangrene occurs in moist tissues and organs such as the mouth, bowel, lungs, cervix, and vulva. Bed sores occurring on body parts such as the sacrum, buttocks, and heels are also classified as wet gangrene infections. Wet gangrene is characterized by numerous bacteria and generally has a poor prognosis (compared to dry gangrene) due to septicaemia. In wet gangrene, the tissue is infected by microorganisms like *Clostridium perfringens* or *Bacillus fusiformis* that causes the tissues to swell and emit a foetid smell. Wet gangrene usually develops rapidly due to blockage of venous (mainly) and/or arterial blood flow. The affected part is saturated with stagnant blood, that promotes rapid growth of bacteria.

Gas gangrene: Gas gangrene is a bacterial infection that produce gas within tissues. It is the most severe form of gangrene usually caused by *Clostridium perfringens* bacteria. Infection spreads rapidly as the gases produced by bacteria expand and infiltrate healthy tissues in the vicinity. Gas gangrene is generally treated as a medical emergency as it quickly spreads to the surrounding tissues.

Gas gangrene is a rapid spreading infective type of gangrene of the muscles characterized by collection of gas in the muscles and subcutaneous tissue. Gas gangrene is caused by clostridial infection (*Clostridium perfringens*/*Clostridium welchii*) due to the fact that it is also called as “clostridial myonecrosis.” Gas gangrene develops in wounds where there is extensive laceration or devitalization of muscle tissue with gross contamination of the wound either by soil or any other foreign bodies. In such type of wounds, the above organisms (usually multiply in anaerobic conditions) are able to multiply and produce toxins.^[8] There is a reference regarding muscular wounds which are characterized by gas and crepitations and considered as fatal in Sushruta samhita, sutra sthaana, 28th chapter (vipareetaavipareeta vrana vigyaneeyam); this condition resembles with “gas gangrene.”

“Kshvedanti ghrughuraayante jvalanteeva cha ye vranaah
Tvak maamsasthashcha pavanam sa shabdham visrujanti ye.”^[9]

Those wounds should also be discarded which make rattling sounds or crepitations, which are characterized by extreme burning sensations as also those which confined to the skin and muscles produce gas with sound.^[10] The wounds which make harsh, groaning, and sparkling sounds; those located in skin and muscle emit air with sound and those not arisen on vital spot are extremely painful should not be taken up.^[11]

High blood sugar levels may also damage blood vessels, resulting in poor blood supply to the area, less blood supply means less nutrients-oxygen for the tissue cells.

So the ulcer becomes more infected, the infection grows rapidly and Gangrene develops. Now Diabetic foot Ulcer may converts in Diabetic foot Gangrene.

Ghurghuraayante

“Ghurghuraayante” means the one which is producing whistling sounds. According to Dalhana, “Ghurghuraayante” means panting/gasping-like sounds.^[3] Such types of sounds are due to the presence of gas in wounds (in gas gangrene). These sounds are often palpable and sometimes audible with a stethoscope.

Jvalanteeva

According to Dalhana, the word “jvalanteeva” denotes the burnt or black color of wound. Clostridial infection produces a foul smelling necrosis of the muscle which becomes from dull red to green and ultimately black in appearance. Ultimately, the muscle in gas gangrene becomes black due to the action of sulfurated hydrogen on iron liberated from broken down muscle hemoglobin.

Tvak Maamsastha

It means the wounds which are located at the level of skin, subcutaneous tissue, and muscle. In gas gangrene also, skin, subcutaneous tissue, and muscles are involved. The crepitus is always present due to the presence of gas in the muscle and subcutaneous tissue in gas gangrene.

DISCUSSION

Healing of Gangrene is a major challenge in surgical practice. It is commonly observed that, such condition many a times fails to heal despite latest modern procedures, wound care including timely surgical debridement & use of all types of antibiotics. Unless treated promptly there is very high risk to the life of patient due to septicemia, gas gangrene or multi-

organ failure.^[12] We have made use of these principles and appropriate procedures like Deepan-Pachan, Snehan, Virechan, Dhawan, Dhupan, Shodhan Ropan, and Bruhan for getting desired healing of Gangrene.

CONCLUSION

Ayurvedic management consisting of Panchtiktaghritaguggulu and leech application was found very effective and safe in the management of case of Kotha (dry gangrene) Gas and crepitations were considered as fatal signs in muscular wounds according to Sushruta. The earliest record of gas gangrene and its fatal outcome is found in Sushruta samhita. Foot gangrene is a frequent complication in Diabetes mellitus. It results from various factors such as atherosclerosis, neuropathy, infection and angiopathy.

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