



MANAGEMENT OF GHANGRANA (DRY GANGRENE) BY IRSAL-E-ALAQ (LEECH THERAPY) - A CASE STUDY

Abuzar Lari¹, Zaid Iqbal², Mohammad Tausif³ and Mussarat Ali⁴

¹Department of Ilaj bit Tadbeer, Mohammadia Tibbiya College, Malegaon, Maharashtra

²Department of Anatomy, Mohammadia Tibbiya College, Malegaon, Maharashtra

³Department of Ilaj bit Tadbeer, State Unani Medical College, Paryagraj, Uttar Pradesh

⁴Department of Ilmul-Sadla, Mohammadia Tibbia College, Malegaon, Maharashtra

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ABSTRACT

Gangrene is a type of tissue death caused by a lack of blood supply. In *Unani* system of medicine gangrene described in the term of *Ghangrana/Shafaquloos* the main cause of *ghangrana* is *Sudda* (obstruction) in blood vessels results to inadequate blood supply which leads to *Nuqs-e-Taghziya* (nutrients) and *Unani* Scholars suggest many modes of treatment including *Amal-e-kai* for preventing further putrefaction. Eminent *unani* scholars used *Irsal-e-alaq* for skin disorders and non healing ulcer, in this case study we applied leeches on wounded toe to prevent amputation, which successfully treated in 30 days of intervention.

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Keywords: *Ghangrana*, *Irsal-e-alaq*, unani medicine, *Amal-e-kai*.

INTRODUCTION

Gangrene is a general term that can be used to describe a number of conditions that involve death and subsequent decay of the tissue in one regional portion of the body^[1]. Gangrene occurs when a body part loses its blood supply, Without a substantially functioning blood supply, the cells struggle to survive and ultimately die^[2]. common variations of gangrene are wet, dry and gas gangrene which can involve any part of the body, but the most common sites include the toes, fingers, feet and hands^[3]. Dry gangrene is a condition that involves tissue death and turns it dry, dark and mummified due to arterial occlusion. It occurs gradually, progresses slowly and affects the lower extremities of the body (toes and feet) due to insufficient blood supply to the tissues. Risk factors are arteriosclerosis, high cholesterol, diabetes and smoking^[4]. In dry gangrene, due to necrosis, the tissue becomes shrunken and blackened and gets detached. In

this condition, amputation is usually practiced due to occurrence of clear lines of demarcation^[5]. Pharmacological management of dry gangrene include opioid analgesics, anticoagulant, antiplatelet and fibrinolytics intravenous antibiotics and promotion of blood circulation^[6]. Antibiotics alone are not effective because they do not penetrate infected tissue sufficiently^[7] Surgical removal of all dead tissue is the mainstay of the management of gangrene and if it is not managed successfully by conservative and minor debridement the last option remain amputation of the affected part^[6]. In *Unani* system of medicine gangrene described in the term of *Ghangrana/Shafaquloos*/ the main cause of *ghangrana* is *Sudda* (obstruction) in blood vessels results to inadequate blood supply which leads to *Nuqs-e-Taghziya* (nutrients), the other causes are exposure of extreme cold to tissues that's effects weakening of *Hararate ghariziya*. Eminent *unani* scholar explained that if blackening and

*Corresponding author: abuzarlari123@gmail.com

bluish discoloration visible in wound or tissue apply *Amal-e-Qai* (cauterization) to stoppage of further putrefaction, application of corrosive drugs is also beneficial in preventing the infection, followed by washing of wound through water and *Sirka* (vinegar) and lastly give *Munbit-e-laham advia* for fresh granulation tissue and proper healing but after doing all the measure if proper healing not achieved the *unani* physicians suggest amputation of the affected part^[8,9,10]. Eminent *unani* physician like *Ibne Sina*, *Zakaria Razi*, *Abul Qasim Zaharawi* and many other used leeches as a natural tool for blood Letting in different diseases. Leech therapy has tremendous effect in skin disease especially in chronic ulcer^[11,12,13]. Avicenna (980-1037 AD) delineated in his book "Canon of Medicine" that leech can suck blood from deep veins which cannot be reached by the conventional wet cupping^[14,15]. Recently, extensive researches on leech saliva unveiled the presence of a variety of bioactive peptides and proteins involving antithrombin (hirudin, bufrudin), antiplatelet (calin, saratin), factor Xa inhibitors (lefaxin), antibacterial (theromacin, theromyzin) and others^[15].

MATERIAL AND METHODS

Present study was carried out in department of Ilaj-bit-tadbeer of NIUM, Bengaluru. Before starting the study a profile of haemogram, biochemical and serological test were performed to rule out the clotting and bleeding time, diabetes, anemia, HIV, HBsAG etc. Leeches are kept in separate glass jars of water labeling with patient name. Superfine powder of haemostatic medicines was applied on wound to prevent excess blood loss and to stop bleeding after leeching. After assessment wound was washed from normal saline. 1 to 2 leeches were applied on edges of toe. The duration of leeching was ranging from 20 to 30 minutes. Each leech sucked about 20 to 25 ml of blood, with further mild ooze occurring for 1-2

hours after leeching. After removing the leeches wound was cleaned from normal saline then allow to dry, a haemostatic mixture powdered containing *Sang-e-Jarahat*, *Dam-ul-Akhwain*, *Gil-e-Armani*, *Phitkari Safaid* (10gm each) was applied on the wound and bandage was wrapped around it. Dressing was done on alternate day, whereas leeches were applied on dry gangrenous toe twice a week. Total treatment continues for 30 days. The assessment of wound was observed on day 1st, day 10th, day 20th day and on 30th day. The effect of leech therapy in non healing ulcer was observed from parameters like size, discharge, smell, pain, edge and floor.

Patient history: A 45 year old male patient was admitted in the male ward of National institute of unani medicine, bengaluru having complaint of severe pain and wound in right greater toe since 1 month. According to patients history his right toe was injured and he left untreated. after 2-3 days of injury pain and swelling gradually increases. At present Patient unable to walk and pain present in rest position also. Patient is chronic smoker 8-10 buds/ day since last 10 years; he left the smoking before 6 months when he first visited the NIUM hospital. Arterial Doppler reveals diffuse atherosclerotic changes in arteries of right lower limb and mild arterial insufficiency noted in ATA territory. no past history DM/HTN etc. On general examination, his vitals are within normal limit and no abnormality detected. On local/Examination mild swelling and redness seen at greater toe, In Palpation local temperature mild increases, Tenderness present (patient refuse to touch), scanty discharge, Movement of greater toe and 2nd finger is restricted due to pain. Pulsation varies in different arteries, Dorsal pedis-weak palpable, Anterior tibialis-weak palpable, Posterior tibialis-palpable, Popliteal-palpable, Femoral-palpable.

Table 1: Gradation Criteria for Assessment of Ulcer.

| Parameters for assesment (Gradation Criteria) | 0 | + | ++ | +++ | ++++ |
|---|--------------|--|--------------------------------------|--|--|
| Size (wagners grading of ulcer) | Healed ulcer | Superficial ulcer | Deeper ulcer to subcutaneous tissue | Abscess formation | Gangrene of part of tissue, limb or foot |
| Discharge | No discharge | Scanty, occasionally discharge | Often discharge needs daily dressing | Perfuse discharge needs daily dressing | ----- |
| Pain | No pain | Localized pain during movement relieve at rest | Localized pain even at rest | Localized pain even during rest and also toward other side | ----- |
| Smell | No smell | Bad smell | Tolerable unpleasant smell | Intolerable smell | ----- |

| | | | | | |
|--------------|--|---|------------------------------------|----------------------------------|-------|
| Edge | Adhere edges | Smooth, regular edges | Rough, irregular edges | Angry look | ----- |
| Floor | Smooth regular with granulation tissue | Rough, regular, mild discharge, less granulation tissue | Unhealthy, less granulation tissue | Unhealthy, no granulation tissue | ----- |

Table 2: Results

| Parameters | Before treatment | During and After treatment | | |
|------------|------------------|----------------------------|--------|--------|
| | Day 1 | Day 10 | Day 20 | Day 30 |
| Size | ++ | ++ | + | 0 |
| Discharge | + | + | 0 | 0 |
| Pain | +++ | ++ | + | 0 |
| Smell | + | + | 0 | 0 |
| Edge | + | + | + | 0 |
| Floor | + | + | + | 0 |



Fig 1.



Fig 2.



Fig 3.

(Starting and During Treatment Day 1 to Day 20)



Fig 4.



Fig 5.



Fig 6.

(After Treatment Day 30)

DISCUSSION

According to *unani* system of medicine leech therapy works on the principle of *Istafraq-e-Mavaade Fasida*, after applying leeches it evacuates local *Mavaad-e-fasida* from the body. In result it facilitates fresh blood supply & promotes wound healing by formation of healthy newer tissues^[12,13]. Leech therapy reduces venous congestion, moistness of the wound, removes slough and facilitates the granulation tissues in turn to helps for wound healing. Proper management with timely leech therapy and dressings gradually reduces infection and facilitate wound healing.. Avicenna mentioned in "Canon of Medicine" that leech can suck blood from deep veins which cannot be reached by the conventional wet cupping and recommended leeching for skin disease^[9]. The saliva of the leech consist of Hirudine which act as anticoagulant. Saliva contains anti-inflammatory action due to presence of substance like Bdelins & Eglins in the saliva which prevents leukocyte accumulation in the surrounding vessels, thus inhibits releases of inflammatory factors which causes chronic wound formation^[16]. Calin, Histamine, Eglins and Hyluronidage, act as vasodilator, anti-inflammatory and anesthetic agent respectively. These properties of leech's saliva help in to reducing pain and size of ulcer and promote healing^[15]. Leech application reduces vascular congestion of the ulcer due to presence of Carboxy peptidase enzyme. Leech saliva has peripheral vasodilator effects due to presence of vasodilator constituent in the saliva improves blood circulation and corrects " ischemia' around the wound, thus promotes wound healing. Present study evaluated that wound showed fast clinical evolution, resulting in complete healing in thirty days. At first assessment, the toe was swelled and there is intense pain in the toe, wound was oval with irregular edges and floor was unhealthy which shows less granulation tissue. The wound was filled with scanty discharge with foul smell (fig.1,2) (table-2). After two weeks of treatment healing processes take place progressively, swelling and intensity of pain reduced, edges was irregular and floor was unhealthy with less granulation tissue could be seen around the nail bed margins and further observed that wound had less discharge without foul smell (fig.3) (table-2) At the third week of the month pain subsided, ulcer reduces in its size, regular margins and floor was smooth and granulated without discharge (fig.4) (table-3). Lastly at the end of month wound on greater toe was properly healed. (fig.5,6) (table-3)

CONCLUSION

Present case report reveals that applying leech therapy found quite effective in the management of dry gangrenous wound. Hence it is recommended that further randomized clinical trials should be done to validate their efficacy in the management of dry gangrene.

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REFERENCES

1. **Brittany Stapp –Caudell.** Gangrene-Recognizing and Treating Cellular Necrosis. Association of Surgical Technologists for Reprint Permission; 2008. p. 548.
2. Diseases and Conditions. Gangrene; 2007. Available from: <http://publications@ast.org>.
3. **Ho H.** Gas Gangrene; 2006. Available from: <http://publications@ast.org>.
4. National Health Portal. Gangrene. India: 2015. Available from: <https://www.nhp.gov.in/>.
5. **Fikri R, Bicknell CD, Bloomfield LM, Lyons SP, Samarasinghe DG, Gibbs RG, et al.** Awaiting autoamputation: A primary management strategy for toe gangrene in diabetic foot disease. *Diabetes Care.* 2011;34:e134.
6. **Al wahbi, Abdullah** (2018-06-01). "autoamputation of diabetic teo with dry gangrene: a myth or a fact?". diabetes, metabolic syndrome and obesity: targets and therapy.11:255-264.
7. **lipsky BA** (December 1999). Evidenced-based antibiotic therapy of diabetic foot infections. *FEMS immunol. Med. Microbial.* 26.(3-4): 267-76.
8. **IH Baghdadi.** Al-mukhatrat fit tibb urdu translation by ccim. 4th vol. new delhi.
9. **Ibn-e-Sina AAI AH.** Alqanoon fit tib.urdu translation by syed ghulam Husain kantoori.4th vol. New Delhi: Idarah Kitab-us-Shifa; 2010.
10. **Ali MZ, Sultana S.** An Assignment on Gangrene. 2012:1-16.
11. **P. Vowden,** "Arterial disease: medical and future perspectives," in Proceedings of the WUWHS Congress, 2008.
12. **Usool-e-tibb,** Hakeem Kamaluddin Hamdani, Urdu Academy, Lucknow 1981, p.497.
13. **Tarjumma Wa Sarhay** Kulliyat e Qanoon (part II), Abu Ali Hasan bin Hussain Bin Ali Bin Sinha, Maturjum Hakeem Kabeeruddin, Daftar ul Mashee, Karol Bag Delhi. 1933 p 1108.
14. **Whitaker IS, Rao J, Izadi D, Butler PE.** Historical article: Hirudo medicinalis: Ancient origins of, and

- trends in the use of medicinal leeches throughout history. *Br J Oral Maxillofac Surg.* 2004;42:133–7.
15. **Munshi Y, Ara I, Rafique H, Ahmad Z.** Leeching in the history – A review. *Pak J Biol Sci.* 2008;11:1650– 31.
16. **Parkash et. al.** Effect of Leech Therapy in Chronic Ulcer - A Case Study, Paripex - *Indian Journal Of Research.* P. 169-170 | Volume : 4 | Issue : 9 | Sept 2015 ISSN - 2250-1991.