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AN INTEGRATIVE MANAGEMENT OF DAGDHA VRANA, A SECOND DEGREE BURN WOUND – A CASE STUDY

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ABSTRACT

Burn injury has been a part of human history since ancient times. People have been affected by burn injuries in different times, with different modes of injury. Ayurvedic concepts and principles for burn injury management are very useful and applicable in the modern age of surgery. The treasure of surgical information from ancient Indian civilizations, Sushrutt Samhita is a valuable source of information on burn injury, evaluation and its management. Although the manner of burn Injury has changed in modern times, the ayurvedic fundamental principles of burn injury, etiology, classifications, treatment and dressing material are very similar to the standard burn wound treatment of modern medical science. So we have taken 2nd degree burn case due to accidental spillage of hot sambar and in this case we have tried to evaluate the efficacy of an integrative approach in the management of second degree burn. And evaluated the benefits and mode of action of shatadhouta ghrita application in burn wound healing.

KEYWORDS: Dhagdha vrana, Shatadouta ghrita, Second degree burn, Ayurveda.

INTRODUCTION

Burn injury is a global health issue that affects people of all ages and genders. It is one of the leading causes of death and disability worldwide. Burn injuries have been around since ancient times, but the way they are caused has changed over time. From simple burns from a cup of tea to complex burns in war, burn injuries in modern civilization involve complex

mechanisms, pathophysiology, and outcomes. The frequency, severity, and prognosis of burns vary depending on the socio-economic situation of the individual and the group of people they affect. Life style, preventive methods, and access to health care facilities all play a role in the occurrence of burn injuries. Electrification of large areas, the use of acids, and chemical warfare have added a new dimension in the ways burn injuries are caused. Approximately 300000 deaths are attributed to burn each year. Burns are one of the leading cause of Disability adjusted life years (DAILY) lost in both developed and underdeveloped countries. Globally, 10 million DALY are lost each yearIn 2004, almost 11 million people were burned worldwide leading to medical care.[1]

Every year, more than a million people get burned in India. A few decades ago, burn injuries were a terrifying problem with high rates of morbidity and death. However, with improvements in technology and a deeper comprehension of intravenous fluid management and other resuscitation techniques, even the most severe burn injuries have a reasonable chance of survival.[2] Over the past seven decades, significant advancements have led to a notable rise in the survival rate of patients with burn injuries. Currently, burn care involves a multidisciplinary team effort with specialists from several domains cooperating to get a conclusive beneficial result. Complex pathology is involved in burn injuries. Because of their weakened immune systems, burn patients are more vulnerable to infection. A burn wound provides an ideal environment for the growth of many bacteria. because of the destruction, more or less Also the rise of antibiotic resistant organisms, is posing a great problem in use of systemic antibiotics. With increase in survival, complications of burn wound healing like discoloration, contractures resulting in reduced loss of range of motion have to be faced. So wound healing without these unwanted complications is always desirable for burn care.[3]

The tried-and-true medical system known as Ayurveda has long been used in India. It is a treasure trove of information amassed over countless years. The primary Ayurvedic treatises are also descriptions of burn injuries in treatises such as Sushrut Samhita Yoga Ratnakar and Harit Samhita. The authoritative manual of medical knowledge in Indian civilization is called. Along with surgical methods, it includes comprehensive explanations of fundamental surgical information such as wound healing and varied wound treatment. It provides detailed explanations of burn injuries and how they are treated. We have attempted to compile the body of research on burn wounds and its management in single case study.[4]

Literature source - Classical textbooks of Ayurveda like Susrut Samhita, Charak Samhita, Astanga Samgrah, Astanga Hriday, Madhav Nidan, Sharangadhar Samhita, Bhavaprakasha, Yoga Ratnakar and Harit Samhita were studided. Online database like Google, Pubmed, Researchgate, etc. were searched. The keywords searched were burn wound, herbs for topical application in burn wound, wound care in burn injury.

Burn Wound Management

Management of burn wound depends upon the depth of the injury along with other factors common for all types of wounds. Bedside clinical evaluation remains the most widespread and costeffective method for depth diagnosis. Depth of burn wound

A. Susruta Samhita Clinical features of all the types mentioned above are described in terms of appearance, presence/absence of blisters, presence/absence and nature of pain, suppuration, extent of tissue destruction, time and nature of healing, systemic involvement etc. which indicates the depth of damage due to thermal injury

1. Plusta: Discoloration; Burning pain without any blisters.
2. Durdagdha: Blisters, severe pain, redness, suppuration, pain lasting for long duration.
3. Samyagdagdha: Without the features of Atidagdha, colour of ripe palm tree fruit, neither elevated nor depressed, along with the features as mentioned above.
4. Atidagdha: Sloughing out, injuries of vessels, ligaments, joints and bones; fever; burning sensation; thirst; fainting; the wound heals very slowly; discoloration after healing.[5]

B. Modern classification of burn depth on clinical appearance Typical clinical appearance of burn depth

1. First degree: Involves only the epidermis and never blisters. It appears as a “sunburn” and is not included in the % TBSA calculation.
2. Second degree superficial: Pink, homogeneous, normal capillary refill, painful, moist, intact hair follicles.
3. Second degree deep: Mottled or white, delayed or absent capillary refill, dry, decreased sensation or insensate, non-intact hair follicles.
4. Third degree: Dry, white or charred, leathery, insensate.[6]

C. Burn depth according to the healing time[7]

Superficial or first degree burns heal within 7 days

Second degree superficial or partial superficial thickness heal within 14 days

deep partial thickness heal within three weeks and in case of full thickness burns after three weeks granulation starts.[7]

So keeping in view the descriptions found in Susrut Samhita with contemporary classification we can compare them as following: First degree as Plusta, Second degree Superficial as Plusta, Second degree Deep as Samyagdagdha and as Third degree Atidagdha.

METERIALS AND METHOD

Meterials required – Gloves, savlon, surgical spirit, Betadine, Normal saline, cotton, Forceps, Gauze piece, Cotton pad, Roller bandage. Shatadouta ghrita.

CASE DISCRIPTION

36 year male patient basically a cook in hostel from banglore karnataka approached a OPD of sri kalabhairaweshwaraswamy ayurvedic medical college and hospital with complaints of severe burning sensation in the right upper limb i.e forearm associated with boils all over the affected forearm.

History of present illness

According to patient as he was a cook and while working in the kitchen accidently boiled water fell on his right upper limb (forearm). immediatly he withdrawed from that area or object, as it was severely burning so immeditely exposed affected area to the running tap water temprorily he was relived from burning sensation after few minutes he noticed a blebs over the affected area. So immediately he approached skamch&rc for further management.

History of past illness

- As per patient he had no medical history and no history hypertension, diabetes, ischemic heart disease, bronchial asthama, cerebrovascular disease.
- Treatment history - Nothing significant

Personal History

- Appetite- Normal
- Sleep- 6-8 hours at night.
- Micturation – 4-6 times in day and 1 times in night
- Bowel – soft and regular once daily,
- Habits – nil
- Examination.

General physical examination

- Built – moderatetly built and nourished
- Nourishment - Over nourished
- Pallor - Absent
- Icterus – Absent
- Cyanosis - Absent
- Clubbing – Absent
- Lymphadenopathy – Absent
- Edema -Absent
- Tongue - Non coated
- Temperature - 98.6 F (afebrile)
- Pulse - 74 bpm
- B.P - 130/80 mm of Hg
- RR - 18 cycles / min
- Height - 165 cm
- Weight - 82kg
- BMI - kg/m2.

Systemic examination

- Respiratory system: Bilateral equal air entry, Normal vesicular breath sounds present
- Abdomen: Soft, non-tender, no organomegaly.
- Cardiovascular system: S1-S2 sound heard, No murmurs.
- Central nervous system: Oriented to time, place and person.

Local examination Inspection: (Rt upper limb)

- multiple blebs are seeen over the affectyed forearm annd arm Degree of burn aprox- 9%.
- skin discolouration and tensed skin, oozing noted, peeled skin.

Palpation

- Tenderness: Present
- Soft skin, tensed skinn, fluctutiom test positive
- Local raise of temperature {-}

Vrana pariksha

Vrana sthana - dakshina pani/bahu

Vrana akriti - multiple blebs

Vrana vastu - Twak

Vrana gandha - Absent

Vrana srava - peetavarnata salilasrava.

Percentage of burn – 9%[8]

Investigations – CBC shows elevated total count, and rised ESR both were suggestive of infection of burn site, Other parameters like blood urea, serum creatinine, rbs were in normal range.

Diagnosis

Based on the history, history of present illnesss, general and local examination this case is daigniosed as 2nd degree burn and percentage aproxx- 9 % Regularly pt was observed for the changes or improvement.

Treatment

Integrative model - Antimicrobials, Analgesics, Shamanoushadis, Sthanika vrana chikitsa.

Antimicrobials and analgesics – Intravenous

Inj zostum 1.5gm iv BD for 3 days

Inj PCT 1gm iv BD for 3 days

Inj pan 40 iv Bdfor 3 days

Oral medicines / Shamanoushadis

Kamadudgdga with moutika 1 tab BD Cap grab 1-0-1 fro 7 days

Chanadan ushiradi kashaya 3tsp;3tsp;3tsp with water for 3 days

Local treatment / applicants for wound care /Sthanika vrana chikitsa.

Shatadouta ghrita for external application till wound heals completely.

OBSERVATION

	TREATMENT	PAIN	BURNING SENSATION	BLEBS	DISCHARGE	TENDERNESS	DISCOLOURATION
20/04/23	IV Antibiotics Analgesics	+++	++	+++	+++	+++	+++
21/04/23		++	+++	+++	+++	+++	+++
25/04/23		++	+++	++	+++	+++	+++
26/04/23	1.Chanda ushiradi kashaya 15 ml-0-15 ml Tab 2. Kamadugdha mouktika 1-0-1ssssss 2. Dressing with Shatadhouts gritha.	++	++	--	+++	++	+++
27/04/23		++	++	-	++	++	+++
28/04/23		+	-	-	+	+	++
29/04/23		-	-	-	-	+	++
30/04/23		--	-	-	-	+	++
31/04/23		-	-	-	-	-	+
1/05 – 9/05/23	Shatadhouta ghrita dressing	-	-	-	-	-	-

BEFORE TREATMENT – DAY OF OPD VISISIT

DURING VISIT TO OPD- BEFORE TREATMENT

DURING TREATMENT

AFTER TREATMENT

DISCUSSION

A. Causitive agents for burn varies

Burn injuries have been around since ancient times, but the way they are caused has changed over time. From simple burns from a cup of tea to complex burns in war, multiple such causes includes dry heat i.e flame, hot metal etc, moist heat hot liquids, electric burns, chemical burns, radiational burns, cold burns and frost bite. Tatra snigdham… sus su 12/15.[9]

B. Heat produced by either by ruksha dravya or singdha dravyas causes burns. burns produced due to snigdha dravyas are more painfull and can penetrate deep into the tissues causes deeper and painfull burns.[10]

C. Thermal burns, in particular, cause damage to the skin and occasionally underlying structures through abrupt temperature change that exceed biologic tolerance. This leads to membrane disruption, protein denaturation, and necrosis. The injury extends from the skin surface to deeper structures in a first-order logarithmic distribution depending on the temperature of the burning agent and duration of exposure.[11]

D. The response of local tissues can lead to injury in the deeper layers. The area of cutaneous injury has been divided into three zones: zone of coagulation, zone of stasis, and zone of hyperemia.[12]

- The dressings are based on the concept of creating an optimum environment to allow epithelial cells to move unimpeded, for the treatment of wounds. Such optimum conditions include a moist environment around the wound, effective oxygen circulation to aid regenerating cells and tissues and a low bacterial load. Oxygen is a prerequisite for successful wound healing because of increase demand during reparative processes like cell proliferation, angiogenesis, collagen synthesis and bacterial defence. Studies have shown wound healing impaired under hypoxia.[13]

A. Principle of Treatment[14]

Susruta Samhita Different treatment principles have been described according to the type of burn injuries. Treatment will be effective only after determination of type of burn.

1. Plusta: Application of heat (Swedan), medicine, local application, food etc. should be of hot potency.

2. Durdagdha: Cold therapy in deep burn and hot therapy in superficial burn. There is another opinion that if there is excessive burning sensation cold therapy and in case of absence of excessive burning sensation. Ghritalepa and Seka etc should be cold. Talukdar Dhrubajyoti et al.

3. Samyagdagdha: I. Local application of Tugaksheeri, Plaksha, Chandan, Gairik, Guduchi, and Ghrita. This mixture does not dry soon, and pacifies Pitta. II. Paste of different types of land and aquatic animals; it pacifies Vata. III. If there is excessive burning pain, Pittavidradhi like treatment.

4. Atidagdha: I. Surgical debridement II. Cold therapy III. Local application of Shali tandul kanva with Ghrita; or Tinduki tvaka, Kapal and Ghrita. IV. Covering the wound with leaves of aquatic plants like Utpal etc. If the wound is involved with Pitta and Rakta, then use of Guduchi leaves for wound covering helps in removing Usma and in Vranaropan. V. Treatment like pita Visarpa.

B. In Second degree burns entire thickness of epidrmis destroyed, blebs or besicles are formed between dermis and epidermis vasiculation is the hall mark of second degree burn.[16]

C. According to classics durdagdha presents with blisters or vesicle formation along with pain and burning sensation so this durdagdha condition can be considered as second degree burn.[17]

D. Any treatment, First it should protect the damaged epithelium, minimize bacterial and fungal colonization, and provide splinting action to maintain the desired position of function. Second, the dressing should occlusive to reduce evaporative heat loss and minimize cold stress. Third, the dressing should provide comfort over the painful wound.[18] Sab).

E. In second degree burns with broken skin, the virulant organisms may enter the burn wound to cause severe infections and burn wounds forms nidus which is best suitable for the multiplication of the bacteria. As it was 2nd degree burns with raw wound broad spectrum antibiotics were administered for 3 days tp control the bacterial load and multiplication.[19] sab).

F. *Ghrita* have *Preenana* (contentment) property because of which, they cause *Dhatu Vardhana* (increasing body tissue). As the drug has *Snigdha Guna* (Unctuous property), it

helps to pacify *Vata*, which vitiates very quickly in *SadyoVrana* (Acute wound). Due to its *Sheeta Guna* (cooling), it helps in normalizing vitiated *Pitta*, thus helps in pacifying *Daha* (burning sensation) property. As the drug helps in *Poshana* (nourishment); leads to healthy scar formation and due to its *Twakvarna prasadana* (improves skin health*)* property and causes *Savarnikarana* (natural skin complexion).[20]

G. *Ghrita* has *Madhura Rasa* (sweet in taste), *Madhura Vipaka*, *Shita Virya*and *Pitta-Vata Shamaka*. Wound healing action of Ghee can be understood by its properties as given.[21]

H. *Shatadhauta Ghrita* is a water and oil emulsion, Processing Ghee for 100 times with water impregnate qualities of *Jala Mahabhuta,* through which and cooling effect can be expected. so is better absorbed through the skin. It acts mainly by maintaining better hydration of the skin and gives moist environment for wound healing which is more beneficial.[22]

I. Shatadhouta ghrita was effective in burn wound healing along with it is also a effective as debriding agent. effect helps in quick eschar fall. In burn wound capillary permiability is increased, due to this plasma rich protien leaked out countinuosly in large amount .these exudats collect in blisters or begin to form dry brown coloured crust called eschar which protects the wound during intial phase. Early seperation of eschar will help better blood circulation in the wound area, as it exers pressure on blood vessel.the quality of eschar reflect in the regeneration of new epithilium, this may leads to better quality of scar formation.[23]

J. This also helps in reducing burning sensation. And Ghee also contains Sterols, Vitamin A, Vitamin E, Vitamin K. Vitamin E is also capable of preserving important morphological and functional features of biological membranes. In addition, vitamin E its reported to have antioxidant and anti-inflammatory activity as well as promoting angiogenesis and reduces scarring.[24]

K. The efficacy of the medication is measured in terms of rate of wound contraction and duration required for complete epithelialization of the wound. The results obtained indicate that the local application of vehicle *Go- Ghrita* has healing activity in this model.[25]

L. Chandana Ushiradi Kashaya is an Ayurvedic herbal decoction that is commonly used in traditional Ayurvedic medicine. It consists of various herbs, and its mode of action is attributed to the individual properties of these herbs. However, specific formulations may

vary among different Ayurvedic practitioners. Generally, Chandana Ushiradi Kashaya is known for its cooling and anti-inflammatory effects.[26]

CONCLUSION

➢ The preliminary findings suggest that Ayurvedic interventions can play a beneficial role in the management of burns, providing an integrative and holistic approach to enhance healing. Further research with larger sample sizes and controlled trials is recommended to validate these findings and establish a more comprehensive understanding of Ayurveda's potential in burn care.

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