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Ayurveda

A REVIEW ARTICLE ON THE PATHOGENESIS AND MANAGEMENT OF CELLULITIS W.S.R TO VRANASOPHA

Aswathi M — 2nd year P. G. scholar, Department of Shalyatantra, P. N. N. M. Ayurveda Medical College, Cheruthuruthy.

Dr. Smitha Mohan P. V. — Professor, Department of Shalyatantra, P. N. N. M. Ayurveda Medical College, Cheruthuruthy.

Dr. Athulya A. — Associate Professor, Department of Shalyatantra, P. N. N. M. Ayurveda Medical College, Cheruthuruthy.

ABSTRACT Cellulitis is spreading inflammation of subcutaneous tissue, mostly associated with bacterial infection. The skin findings follows the classic signs of inflammation: dolor (pain), calor (heat), rubor (erythema) and tumour (swelling). It is a common and serious condition which is having an incidence of 24.6 out of 1000 persons per year worldwide. It is commonly seen in the age group of 45-64 years and mostly seen in males. 31% of patients hospitalized with so called cellulitis, were misdiagnosed. It is common in face, lower limb, upper limb and scrotum, where subcutaneous tissue is lax. The most affected site is lower limb i.e., 75 to 90% cases. While analysing the symptoms of cellulitis, it can be correlated to different stages of vrana sopha i.e., ama, pachyamana or pakvavasthas. In cellulitis predominant doshas are pitha and rakta. Hence measures to elevate the prakupita pitharakta are to be adopted, such as apatarpana, pariseka, alepa, raktamokshana (ekadasha upakrama) etc. This article discuss about the pathogenesis and management of cellulitis in terms of Ayurvedic perspective.

KEYWORDS : Cellulitis, Vranasopha, Ekadasha upakrama

INTRODUCTION

Cellulitis is a common, potentially dangerous acute inflammatory condition of the dermis and subcutaneous tissue generally associated with bacterial infection. Streptococcus and Staphylococcus are the most common causal pathogens, which enter the body via a break or cut in the skin. It is having an incidence rate of approximately 200 cases per 100,000 individuals worldwide, often seen in middle aged and older adults[1]. 35-47% of patients having a previous history of cellulitis and the recurrence occurs with highly variable intervals[2]. 31% of patients hospitalized with so called cellulitis were misdiagnosed. Cellulitis can emerge anywhere on the body, but usually appears on the face, limbs or scrotum, where in subcutaneous tissue is lax. Most of the time, it affects the lower limbs. Patients who are immunocompromised, have defects in skin integrity and circulation or have comorbidities such as diabetes mellitus, obesity, chronic tinea pedis, venous insufficiency and lymphoedema, are at higher risk of developing cellulitis. Cellulitis typically presents as localised pain, erythema, swelling, tenderness and warmness. The conspicuous and distinguishing feature of cellulitis is, there is no pus, edge, limit or fluctuation. Cellulitis is infrequently complicated by bacteraemia, gangrene, osteomyelitis, necrotizing fascitis, toxic shock, glomerulonephritis and endocarditis. It is usually treated with antibiotics and glycerine magnesium sulphate dressing, which helps to reduce oedema due to its hygroscopic action.

While analysing the symptoms of cellulitis, it can be corelate to *vranasopha*. *Vranasopha* is swelling premonitory to *vrana* (wound / ulcer). Acharya Susruta defined *sopha* as thick, elevated, even or uneven, accumulated in *twak* and *mamsa* with vitiated *doshas* and arising in any one part of the body. The three progressive stages of *vranasopha* like *amavastha, pachyamanavastha* and *pakwavastha* respectively, can be correlate with different stages of cellulitis. Here, the collected data are correlated with *vranasopha* and displays the pathogenesisalong with its management.

AIM AND OBJECTIVES

- To understand the correlation between cellulitis and *vranasopha* through its pathogenesis.
- To develop the management of cellulitis in Ayurvedic concept.

MATERIALS AND METHODS

Compiled matters collected from Samhitas, journals etc. are critically analysed for the discussion and attempts has been made to draw some fruitful Ayurvedic correlation for cellulitis.

Ayurvedic View

Pathogenesis

In Susruta Samhita, the *samprapti* of *vranasopha* explained as, it resides in *twak* and *mamsa* with accumulation of *doshas* and arising in any one part of the body[3]. The vitiated *vata dosha* displaces the *rakta, pitta* and *kapha* to different *srotas* of the body. The *vayu* is further obstructed by these morbid elements and causes accumulation of *pitta, rakta* and *kapha* in between *twak* and *mamsa* which results in *sopha.* It exhibits the close resemblance with the pathogenesis of cellulitis. In cellulitis the infection enters into the skin through a wound or an insect bite. Then microorganisms invade the dermis and subcutaneous fat. It leads to manifestation of symptoms and in progressive stages it gives rise to different complications.

Table 1: Pathogenesis Of Cellulitis Related To *Shatkriyakala*

PATHOLOGICAL STAGES	PATHOLOGICAL EVENTS
SANCHAYA (Stage of Accumulation)	*Nija* and *agandhuja nidanas* like *abhighata, krimi, visha, dushta vrana,* leads to the accumulation of *doshas* at the sites.
PRAKOPA (Stage of Aggravation)	*Tridosha prakopa* along with *rakta dushti*
PRASARA (Stage of Propagation)	*Tiryak gati* of *doshas*
STHANA SAMSRAYA (Stage of Localisation)	*Twak mamsa sira adi dushti*. Manifestation of prodromal symptoms such as *supti, raga, alpa swayadhu, vedana* etc.
VYAKTA (Stage of Manifestation)	Appearance of clinical features – *vedana, arunavarna, sopha*
BHEDA (Stage of Complications)	Communicated to adjacent parts/areas, *Upadravas*

Differential Diagnosis

The clinical manifestations of cellulitis are fever, pain, tenderness, red shiny and stretched warm skin, swelling and there will be “no edge, no pus, no fluctuation and no limit”. Sometimes only a tingling sensation is the first local symptom. Most of all these signs are visible in case of *vranasopha* as well. As per Acharya Charaka, it is characterised by heaviness, mobile, swelling, calor, increased vascular permeability, horripilation and discolouration[4].

Visarpa as vitiated *dosha* beginning to spread in *twak, rakta, mamsa* and *meda dhatu* produced an inflammatory swelling. This type of swelling is spreading in nature and hence known as *Visarpa*[5]. It is characterised by swelling without elevation and spreads to all parts of body with wider lesions.

The *avarana* on *vata dosha* by *rakta dhatu* is known as *raktavrita vata*. The clinical feature shows *karma hani* of *vata* and *karma-vrudhi* of *rakta*. This gives rise to feature like pain, burning sensation, situated in between *twak* and *mamsa*, discolouration, swelling and circular shape.

Table 2: Differential Diagnosis As Per Ayurveda

Cellulitis	Vrana sopha	Visarpa	Raktavrta vata
Pain, Tenderness	*Vedana*	--	*Arti*
Erythema	*Twak vaivarnyam*	--	*Raga*
Swelling	*Sopha*	*Sopha*	*Swayadhu*
Warmness	*Ushmata*	--	--
Fever	*Jwara*	--	--
Burning sensation	*Daha*	--	*Daha*
--	*Pipasa, Aruchi*	*Anunnatham*	*Mandala*
--	*Twakmamsasthayi*	*Sarvato visarana*	*Twakmamsantaram*
--		*Visphota*	

Stages Of Cellulitis

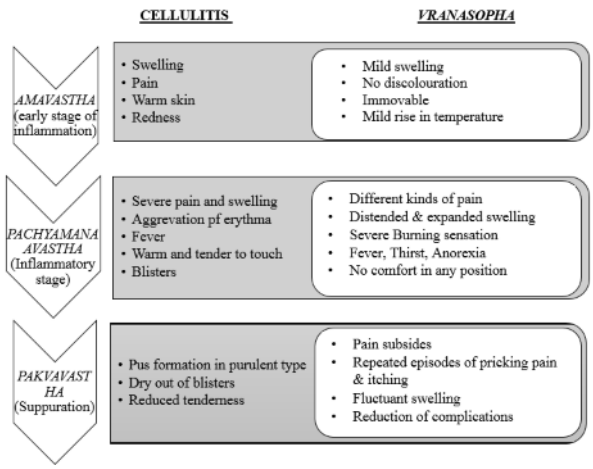

Chart 1: Stages and features of Cellulitis and *Vranasopha*

DISCUSSION

Differentially diagnosing the cellulitis from several other diseases that share a similar presentation is the primary challenge in its diagnosis. Such as erysipelas, erythema migrance, DVT etc. Once the condition is diagnosed it is mandatory to understand the *doshic* state of this condition. While analysing the *samprapti* one can see that the *nidanas* such as *nija* and *aganduja* factors causes *dushti* of *tridosha* which leads to *dushti* of *rasa rakta* and it gets located into *twak pradesha*, then develops *lakshanas* like *ruk, raga* and *shopha.*

To achieve the *upashaya* from *vranashopha* eleven important treatment modalities has been mentioned in Sushruta Samhita in the context of *Shashti Upakrama*. In these *upakramas*, first eleven are described for *vranashopha*. The *upakramas* like *pralepa* and *visravana (siravyadha)* are used commonly in *ama* and *pachyamana avastha* among these treatment modalities. For the management of cellulitis, one can adopt *apatarpana, alepa, pariseka, visravana, upanaha* and *virechana* from *ekadasha upakrama* of *vranasopha*.

Apatarpana (langhana) is the first procedure in *ekadasha upakrama* which is very important to break the wound pathology. It is usually employed for treating all types of inflammation. It helps to pacify the excessive vitiated *doshas* and helps to stimulate the *kayagni* and *dhatwani.*

Susruta mentioned that *alepa* is *pradhanatama* and *adya upakrama* for all type of *shophas.* Just as burning house is saved by pouring water over it to extinguish the fire, similarly applying the *lepa* mitigates pain quickly. It is having properties like *prahladana, sodhana, sopha harana* and *ropana*. Drugs which can be used as *alepa* are *panchavalkala* and *dashanga*. The studies shows that *dashanga* contain analgesic properties. Inflammatory edema is reduced which is probably due to *dhatushoshak* (absorptive) effect of *kashaya* and *tikta rasa* (taste) of most of the drugs in *dashang lepa*. It alleviates vitiated *kapha* to reduce the edema. Erythema in inflammatory process is due to increase blood supply over injured area due to vasodilation. It helps in reduction of erythema, which might be due to *pittashamaka* effect of the drug when apply with *go ghrita*. The *kashaya, tikta rasa* and *sheeta virya* have capability to constrict blood vessels, hence it reduces the erythema. *Nyagrodhadi gana* which include *panchavalkala* as *vata, udumbara, ashwattha, plaksha* and *parisha* have *kashayarasa, prakshalana, shothahara*, *vranaropana* and *twak prasadana* properties. It also possesses antibacterial property as well as anti-inflammatory property.

One of the *upakrama* for *sopha* is *shodhana- ropana*, there is a study which shows external application of *aragwadhadi kashaya* could bring about antimicrobial activity against strepto cocci and klebsilla. *Triphala kashaya* is also equally effective by virtue of its *samshodhana* and *samshamana* property. As it is a *pitta* prominent condition and recurrency is more, *virechana* is an effective treatment option.

In cellulitis there is vitiation of *pitta* and *rakta* caused by any injury or scratch, in such condition Susruta has told that *parisheka* have to done with *ksheera, ghrita, madhu, sarkarodaka*, *madhuroshadhaand ksheeravrksha. Parisheka* helps in debridement of slough and development of granulation tissue. *Nyagrodhadi kashayam* is one among them which is having properties like *srava stambhana, lekhana, kledana* and *raktashodhana.*

Jalaukavacharana is a parasurgical procedure, for removing deeply seated toxins in the blood and pacifying vitiated *pitha doshas.* It is indicated in acute condition to relieve pain and to prevent *paka*. Leech application i.e., hirudotherapy bears anti-inflammatory pharmacokinetics due to enzymes like Bdellins and Eglins in the saliva, anti-coagulant effect of hirudin and vasodilatory effect in acetylcholine in saliva. So, it can be used in the treatment of cellulitis.

Table 3: Probable Prescription Of Cellulitis:

Formulations	YOGAS	ACTIONS
Kashaya	*Guluchyadi kashayam*	*Pithahara, jwaraghna*
	Mahatikthakam kashayam	*Kushtaghna, krimighna, pithahara*
	Punarnavadi kashayam	*Sarvangasothahara, shoolahara*
	Aragwadhadi kashayam	*Dushtavrana vishodhana, kushtaghna, kandughna*
	Patolamooladi kashayam	*Sodhana, kushtaghna*
	Amrutotharam kahayam (in first stage)	*Jwarahara, sothahara*
	Chiruvilwadi kashayam (in first stage)	*Deepana, pachana*
Gutika	*Gokshuradi guggulu*	*Vatarakthahara*
	Punarnavaadi guggulu	*Sophahara, mutrala*
	Thriphala guggulu	*Sothahara*
	Vettumaran gulika	*Jwaraghna*
	Chandraprabha vati	*Sarvaroga pranashini, yogavahi, tridoshaghna, kushtaghna, kandughna,*
	Dooshivishari gulika	*Vishaghna, kushtaghna*
	Vilwadi gulika	*Vishaghna, jwaraghna, kushtaghna*
Choornam	*Guggulu panchapala choornam*	*Kushtaghna, krimighna*
	Avipatti choornam	*Pithahara*
External Application	*Satadhouta ghrtam*	*Daha hara, kushtaghna*
	Ellumnishadi lepana	*Sothahara*
	Panchavalkala lepa	*Sothahara, vranaropana, twak prasadana*
	Dashanga lepa	*Dhatusodhaka, rujahara, sophahara*
Kshalana / Avagaha / Seka	*Guduchi & kokilaksham kwatha*	*Vata,rakta,pithahara, dahasamaka, kushtaghna*
	Thriphala Kashaya	*Samsodhana, samsamana*
	Aragwadhadi Kashaya	*Krimighna, vrana sodhana*
	Himavan agada kwadha	*Raktapithahara, dahaprashamana, vishaghna, sothahara, Vedana sthapana, vranaropana, pithahara*
Rsoushadhis	*Rasa sindooram*	*Vyadhikshamatwa, pithahara*

	Gandhaka rasayanam	*Vishaghna, kandughna, trodoshaghna, kushtaghna, raktadushti hara*
	Rasa karpoora	*Kushtaghna, vrana sodhana, kaphapitha hara*
	Punarnava mandoor	*Shwayadhuhara, kushtaghna, krimighna, jwaraghna*

CONCLUSION

In Ayurvedic point of view pathogenesis and stages of cellulitis can be corelate with *vranasopha.* The features of cellulitis viz. swelling, pain and other inflammatory symptoms are similar to *vranasopha lakshanas*. Progression of cellulitis also having close resemblance with stages of *vranasopha.* Here it shows *pitha pradhana tridosha dushti* along with *rakta dhathu dushti* which affects *rasa raktavaha srotas*. Hence to manage this *prakupitha pitha rakta*, greater part of *ekadasha upakrama* can be take on in these cases along with proper internal administrations.

REFERENCES

1. Hailu Wondafrash A et.al., Incidence and Causes of Cellulitis Among Patients at Tupua Tamasese Meaole Hospital in Upolu, Samoa in 2019. Cureus. 2023 Nov 5;15(11): e48318.
2. Bin S Ong et.al., Recurrent Cellulitis: Who is at Risk and How Effective is Antibiotic Prophylaxis?, Int JGen Med. 2022; 15: 6561-6572.
3. Prof K.R Srikantha Murthy. Illustrated Susruta Samhita. Reprint edition 2017, Vol 1. Sutrasthana Ch 17/3. Chaukhambha Orientalia, Varnasi;2017. 122 p
4. R.K. Sharma, Bhagwan Dash. Agnivesa's Charaka Samhita. Reprint edition 2016, Vol 3. Chikitsasthana Ch 12/11. Chowkhamba Sanskrit series office, Varanasi; 2016. 485p.
5. P. V. Sharma. Charaka Samhita. Edition 2014, Vol 2. Chikitsasthana 21/11. Chaukhambha Orientalia, Varanasi; 2014. 342p.
6. Jaybhaye.Geeta, Badwe. Yogesh. Effectiveness of panchavalkala pralepa and jalaukavacharana in reducing duration for regression of vranashopha w.s.r. to cellulitis: a randomized controlled trial, International Journal of Ayurveda and Pharma Research, 2022;10(1):21-27
7. Matti Karppelin,Acute and Recurrent Cellulitis, Academic dissertation, University of Tampere, 2015
8. R.Pradeep Rao, Clinical study of cellulitis, Dissertation.Dr.M.G.R. Medical University, May 2015
9. Somen Das, A concise textbook of surgery 9th edition-ISBN978-81-905681-2-8- 2016 Kolkata chapter 7, p 84
10. Soni Ashish et.al., Efficacy of Dashang Lepa in the management of Vranashopha (Cellulitis), International Journal of Ayurvedic Medicine, 2013, 4(3), 227-236, ISSN: 0976-592.
12. Anil k. Tripathi et. al., Haematological study in patients of cellulitis treated by leech therapy. J. Res. Educ. Indian Med., Vol. XVII (3-4) : 95-100 (2011), ISSN 0970-7700.