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FACTORS AFFECTING THE CONSERVATIVE MANAGEMENT IN EARLY CELLULITIS: A PROSPECTIVE STUDY

General Surgery

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KEYWORDS

Cellulitis, Debridement,

INTRODUCTION:

Cellulitis is defined as an acute infection of skin mainly involving the dermis and subcutaneous tissues, this can lead to life threating complications. Erysipelas refers to superficial cellulitis of the face or extremities with lymphatic obstruction (1). Early cellulitis means with no evidence of necrosis, abscess, gangrene or sepsis. Gram positive cocci such as Streptococcus and staphylococcus aureus are thought to predominant cause for cellulitis (2). Positive blood cultures are present in only 10% of cases. Wound or tissue culture are negative in up to 70% of cases (3). Serological studies showed that group A streptococcal infection is an important cause of culture negative cellulitis (4). Skin infection with pus is associated with staphylococcus aureus (5). Necrotising fasciitis is associated with mainly Group A streoptococcal infection but it can be due to mixed infections including gram negative and anaerobic organisms. Mainly seen in the elderly and immunosuppressed person.

Hallmark of cellulitis include rubor (redness), dolor (pain), tumour (swelling), calor (heat) as per clinical presentation considered. It may ranges from localised erythema in systemically preserved patient to rapidly spreading erythema and fulminant sepsis seen with necrotising fasciitis. Pain out of proportion to the clinical signs give clues to consideration of necrotising fasciitis (6). Proper examination may show a portal of entry such as ulcers, trauma, eczema, or cutaneous mycosis.

Risk factors for cellulitis can be classified as General and Local factors. General risk factors include obesity, diabetes mellitus, history of cellulitis, immunosuppression and peripheral vascular disease. And local factors neglected wounds, skin disease etc. (7).

Aim: To study the factors affecting the conservative management of the early cellulitis**.**

Objectives:

a) To study the outcome of conservative management of early cellulitis cases.
b) To study the factors influencing the conservative management of early cellulitis.

MATERIAL AND METHOD:

This study was conducted in RCSM Govt. Medical College and CPR Hospital (Tertiary Care Centre), KOLHAPUR, MAHARASHTRA. Study period was 3 months from July 2019 to September 2019 and was prospectively done. We have considered all early cellulitis cases indoor admissions in the Surgery ward and also in ICU. We have analysed admissions of three months. Early cellulitis cases are those which are presented without any evidence of necrosis, abscess, gangrene or sepsis.

RESULTS:

In the present study, we included a total of 35 patients. Mean age of the patients was 45.11 ± 18.96 years with age group more than 50 years being the most common. Males comprised 71% of all patients included in the study. The most common location of cellulitis was left lower side (45.7%). Right lower and upper were equally involved (20% each), while right and left gluteal, left upper and bilateral involvement was seen less commonly (Table 1). We observed idiopathic cellulitis to be the most common (42.9%), followed by snake bite (34.3%). Cellulitis due to trauma (14.3%) and extravasation (8.6%) were less commonly observed in our study population. Of all the included patients, 22.9% were diabetic. Conservative management was done in 54.3% of the patients, while the rest received surgical management (Table 2). Of those receiving surgical treatment, 13 patients underwent debridement and 3 patients received fasciotomy. As compared to those who received surgical management, patients undergoing conservative management were relatively younger (aged more than 50 years, 36.8% vs. 50%), mostly males (84.2% vs. 56.3%), had lesions more commonly on the left side (63.2% vs. 31.3%), higher proportion of snake bite cases (47.4% vs. 18.8%) and less commonly diabetic (15.8% vs. 31.3%). However, none of the variables were found to be significantly associated with the type of treatment given.

DISCUSSION

The present study was done to describe the clinical characteristics of patients diagnosed and treated with cellulitis in our department. Majority of the patients in our study were aged more than 50 years and 71% were males. Increasing age of the patients has been associated with increasing severity of cellulitis (8). Collazos et al reported good clinical outcomes in younger patients (mean 62.7 vs. 68 years, p value = 0.03) (9). Deshpande et al studied 130 patients of limb cellulitis, in which most common age group involved was 51 to 60 years (10). Bilateral lower limb was involved in one of our patient. This patient had pedal oedema in both lower limbs associated with chronic renal disease. Location of cellulitis was not found to affect the type of treatment given in our study. Deshpande et al reported that right lower limb was most commonly involved (41.54%) followed by left lower limb (28.46%), right upper limb (14.62%), left upper limb (10%). Bilateral lower limbs were involved in 7 patients (5.38%). However, no patient had bilateral upper limb involvement in their study.

Idiopathic cellulitis was the most common type in our study population. Of the 12 snake bite cases, 9 were treated conservatively. Deshpande et al reported the most common risk factor was bare foot walking as was seen in 72 patients (55.38%) followed by diabetes (10%), direct trauma (10%), dermatitis (6%), insect bite, lymphedema and working with bare hands (4.62%). Least common risk factor was venous insufficiency seen in 5 patients (3.85%). Adimoolam and Pitchai studied 100 non-diabetic patients with lower limb cellulitis. In their study, post-bite cellulitis was responsible for most cases of cellulitis in the study group 21%, followed by traumatic ulcers which were infected and web space infections/intertrigo (17%). Obtaining careful history from the patient carries immense importance as it can help the treating physician recognize cellulitis early and institute an effective treatment early in the course.

Presence of diabetes in our study was not found to be associated with the type of treatment given. Burden of diabetes mellitus in India has grown to epidemic proportions. Cellulitis in a diabetic patient is one of the most common infective complications seen in surgical practice. It carries high morbidity and may be fatal as well. Amit Jain's classification of diabetic foot complications proposed in 2012 is a holistic approach to understanding diabetic foot (11). Gopal and Santosh used this classification to descriptively analysed cellulitis in diabetes and reported that 80% of the patients required some form of surgery (12). Collazos et al found that immunosuppression was independently associated with poor cellulitis outcome in the multivariate analysis.

In our study, conservative management was done in 54.3% of the patients, while the rest received surgical management. In the study by Deshpande et al, most patients were managed conservatively (84, 64.62%) and 46 (35.38%) were treated with surgery (amputation-1, release incision-18, release incision + debridement-2 and debridement in 25 patients). In the study by Adimoolam and Pitchai, 76% of the patients required surgical debridement (n = 76), 45 of them required decompression of some muscular compartment by means of fasciotomy, while 4% of individuals required amputation.

There are a few limitations of this study. First, ours is a single centre study with a small sample size, so the treatment outcomes are specific to our hospital and thus might not be applicable to other geographical centres. Second, we did not follow up the patients to evaluate their long term clinical outcomes and assess factors associated with good outcomes. Last, we did not note the results of the microbiological laboratory tests which were done for the patients. Future studies are needed to assess the incidence of various types of microbials involved in cellulitis.

CONCLUSION

In our study population, left lower limb was most commonly involved. Idiopathic cellulitis was the most common, followed by snake bite, post-trauma and extravasation. Conservative management was done in 54.3% of the patients, while the rest received surgical management. Factors like age, gender, location of lesion, aetiology and diabetic status were not found to be significantly associated with the type (conservative or surgical) of treatment given. Cellulitis is an important cause of morbidity among diabetes, however, even non-diabetics can have morbid consequences due to cellulitis. Further research is required which can help develop consensus about standardizing prophylactic and treatment protocols.

Table 1. Baseline Characteristics Of The Patients Included In The Study

Variables	Frequency	Percent
Age group (in years)		
Upto 30	9	25.7
> 30 to 50	11	31.4
More than 50	15	42.9
Gender		
Female	10	28.6
Male	25	71.4
Location		
Bilateral lower	1	2.9
Left gluteal	2	5.7
Left lower	16	45.7
Left upper	1	2.9
Right gluteal	1	2.9
Right lower	7	20
Right upper	7	20
Aetiology		
Idiopathic	15	42.9
Post-extravasation	3	8.6
Post-traumatic	5	14.3
Snake bite	12	34.3
Diabetic status		
Diabetic	8	22.9
Non-diabetic	27	77.1
Treatment given		
Conservative	19	54.3
Debridement	13	37.1
Fasciotomy	3	8.6
Total	35	100

Table 2. Association Of Various Patient Related Variables With The Type Of Treatment Give

	Treatment type	Total	p value	
Age group (in years)	Conservative (n=19)	Surgical (n=16)		
Up to 30	5	4	9	
	26.30%	25.00%	25.70%	
> 30 to 50	7	4	11	0.07
	36.80%	25.00%	31.40%	
More than 50	7	8	15	
	36.80%	50.00%	42.90%	
Gender				
Female	3	7	10	
	15.80%	43.80%	28.60%	
Male	16	9	25	0.76
	84.20%	56.30%	71.40%	
Location				
Bilateral lower	0	1	1	
	0.00%	6.30%	2.90%	
Left gluteal	1	1	2	
	5.30%	6.30%	5.70%	
Left lower	11	5	16	
	57.90%	31.30%	45.70%	
Left upper	1	0	1	0.55
	5.30%	0.00%	2.90%	
Right gluteal	0	1	1	
	0.00%	6.30%	2.90%	
Right lower	3	4	7	
	15.80%	25.00%	20.00%	
Right upper	3	4	7	
	15.80%	25.00%	20.00%	
Aetiology				
Idiopathic	6	9	15	
	31.60%	56.30%	42.90%	
Post-extravasation	2	1	3	
	10.50%	6.30%	8.60%	
Post-traumatic	2	3	5	0.28
	10.50%	18.80%	14.30%	
Snake bite	9	3	12	
	47.40%	18.80%	34.30%	
Diabetic status				
Diabetic	3	5	8	
	15.80%	31.30%	22.90%	
Non-diabetic	16	11	27	0.24
	84.20%	68.80%	77.10%	

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