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STUDY OF CLINICAL PROFILE OF PATIENT WITH LOWER LIMB CELLULITIS

General Surgery

Dr. Shivam Rajendra Shet — Junior Resident, M.S. (General Surgery), Dr. Balasaheb Vikhe Patil Rural Medical College, Loni

Dr. Kishor Gadhave — Professor, Department of Surgery, Dr. Balasaheb Vikhe Patil Rural Medical College, Loni

ABSTRACT

Background: Lower limb cellulitis is a common bacterial infection affecting the dermis and subcutaneous tissues, often leading to significant morbidity. Understanding the demographic characteristics, clinical presentation, risk factors, and treatment outcomes is essential for optimizing management strategies, particularly in rural healthcare settings. **Objectives:** To study the clinical profile of patients with lower limb cellulitis, including age and sex distribution, clinical presentation, comorbidities, treatment modalities, and outcomes. **Methods:** This was a descriptive cross-sectional observational study conducted over two years (February 2024 – February 2026) at the Department of Surgery, Dr. Vithalrao Vikhe Patil Rural Hospital, Loni. A total of 290 patients aged above 12 years with lower limb cellulitis were included. Data were collected on demographic parameters, clinical features, laboratory and radiological investigations, comorbidities, treatment modalities, and outcomes. Descriptive statistics were used to analyze the data. **Results:** The majority of patients were males (60.7%) aged 41–60 years (46.9%). Common clinical features included swelling (90.3%), pain (85.5%), redness (81.4%), and local rise in temperature (78.6%). Diabetes mellitus (45.5%) and hypertension (33.1%) were prevalent comorbidities. Most patients (62.8%) were managed conservatively, while 37.2% required surgical intervention. Favorable outcomes were observed in 89.6% of patients, with mortality of 4.2%. **Conclusion:** Lower limb cellulitis predominantly affects middle-aged males, with diabetes being a significant risk factor. Early recognition and appropriate management, primarily conservative, lead to favorable outcomes.

KEYWORDS

Lower Limb Cellulitis, Clinical Profile, Diabetes Mellitus

INTRODUCTION

Lower limb cellulitis is a common and potentially serious bacterial infection of the skin and subcutaneous tissues that poses a significant burden on healthcare systems worldwide. It is characterized by an acute onset of erythema, warmth, swelling, pain, and tenderness, most frequently affecting the lower extremities.[1,2,3] Lower limb cellulitis is a common yet complex clinical condition influenced by a wide range of host, environmental, and microbial factors. Its variable presentation and potential for serious complications underscore the importance of a thorough understanding of its clinical profile. By systematically analyzing the characteristics of patients with lower limb cellulitis, clinicians and researchers can enhance early detection, improve treatment strategies, reduce recurrence, and ultimately lessen the burden of this disease on individuals and healthcare systems. [4,5] An in-depth study of the clinical profile not only enriches existing knowledge but also serves as a foundation for improving patient care and guiding future research in the field of skin and soft tissue infections.

Study Methodology

This descriptive cross-sectional observational study was conducted over a period of two years, from February 2024 (after obtaining Institutional Ethics Committee approval) to February 2026, in the Department of Surgery at Dr. Vithalrao Vikhe Patil Rural Hospital, Loni. A minimum required sample size of 284 was calculated, and a total of 290 cases were ultimately included in the study. Consecutive sampling was employed, and all eligible patients presenting during the study period were enrolled after fulfilling the inclusion criteria and providing informed written consent.

The study population comprised adult patients admitted to the Department of General Surgery with a clinical diagnosis of lower limb cellulitis, either unilateral or bilateral, irrespective of etiology. Patients above 12 years of age who consented to participate were included. Patients treated only on an outpatient basis, those with cellulitis involving other body parts, pregnant patients, and individuals with Hansen's disease, filariasis, necrotizing fasciitis, deep-seated infections, malignancy, polytrauma, or lower-limb ulcers were excluded from the study.

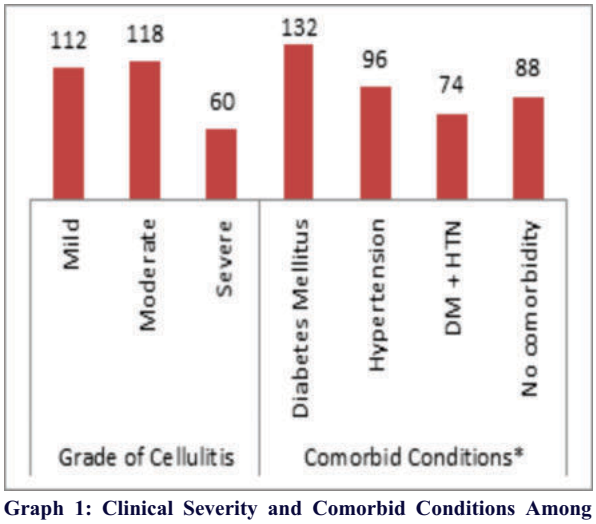
Patients were managed according to standard institutional treatment protocols, including conservative measures, antibiotic therapy, and surgical interventions when indicated. Clinical progress, complications, duration of hospital stay, and treatment response were monitored during hospitalization. Outcomes were categorized based on recovery and complications, and follow-up was conducted through outpatient visits or telephonic communication. Data were entered into Microsoft Excel and analyzed using appropriate statistical software. Continuous variables were expressed as mean and standard deviation, while categorical variables were expressed as frequencies and percentages. Associations between risk factors, disease severity, and outcomes were assessed using suitable statistical tests, with a p-value of less than 0.05 considered statistically significant.

RESULTS

Table 1: Clinical Severity and Comorbid Conditions Among Study Subjects

Variable	Category	Number (n)	Percentage (%)
Grade of Cellulitis	Mild	112	38.6
	Moderate	118	40.7
	Severe	60	20.7
Comorbid Conditions*	Diabetes Mellitus	132	45.5
	Hypertension	96	33.1
	DM + HTN	74	25.5
	No comorbidity	88	30.3

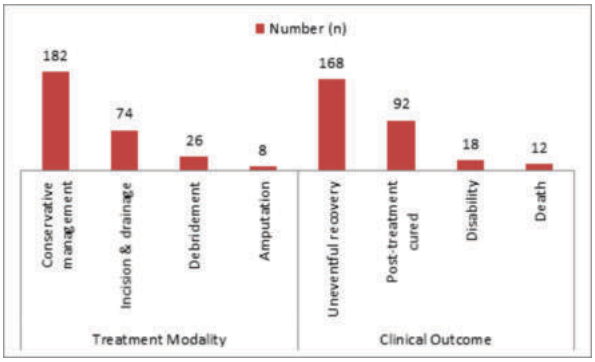
*Multiple responses possible



Graph 1: Clinical Severity and Comorbid Conditions Among Study Subjects

Table2: Treatment Modality and Clinical Outcome of Lower Limb Cellulitis

Parameter	Category	Number (n)	Percentage (%)
Treatment Modality	Conservative management	182	62.8
	Incision & drainage	74	25.5
	Debridement	26	9.0
	Amputation	8	2.7
Clinical Outcome	Uneventful recovery	168	57.9
	Post-treatment cured	92	31.7
	Disability	18	6.2
	Death	12	4.2



Graph 2: Treatment Modality and Clinical Outcome of Lower Limb Cellulitis

FIG 1) Lower Limb Cellulitis

DISCUSSION

Lower limb cellulitis remains a common surgical condition associated with significant morbidity, prolonged hospitalization, and occasional mortality, particularly in patients with underlying comorbidities. The present descriptive cross-sectional observational study was conducted on 290 patients over a two-year period at a rural tertiary care hospital, with the objective of evaluating the demographic profile, clinical presentation, severity, management strategies, and outcomes of lower limb cellulitis. The findings of this study provide valuable insight into the disease pattern in a rural Indian population and highlight factors influencing severity and treatment outcomes. (6,7,8)

In the present study, lower limb cellulitis predominantly affected middle-aged and elderly individuals, with the highest incidence observed in the 51–60-year age group (24.8%), followed by the 41–50-year group (22.1%) and patients above 60 years (20%). This age distribution is consistent with earlier studies, which have reported an increased susceptibility to cellulitis in older age groups due to age-related decline in immunity, higher prevalence of chronic comorbid conditions, and compromised skin integrity. Younger age groups constituted a smaller proportion, indicating that lower limb cellulitis is relatively uncommon in adolescents and young adults unless associated with trauma or predisposing factors.(9,10)

A clear male predominance was observed in the study, with males accounting for 60.7% of cases. This finding is comparable with several Indian and international studies, which have reported higher incidence in males. Occupational exposure, outdoor activities, higher rates of minor trauma, and delayed healthcare-seeking behavior among males may explain this trend. Females constituted 39.3% of cases, suggesting that although less frequent, cellulitis remains a significant health concern among women as well.

Regarding laterality, unilateral involvement was far more common than bilateral disease, with the right limb affected in 45.5% and the left limb in 40.7% of cases. Bilateral cellulitis was noted in 13.8% of patients and was often associated with systemic illnesses such as diabetes mellitus, chronic venous insufficiency, or lymphedema. The predominance of unilateral disease supports the role of local factors such as trauma, skin breaches, and localized infections in the pathogenesis of cellulitis.

Clinically, the most common presenting features were swelling (90.3%), pain (85.5%), redness (81.4%), and local rise of temperature (78.6%), reflecting the classical inflammatory signs of cellulitis. Systemic manifestations such as fever were present in 66.9% of patients, indicating moderate to severe disease in a significant proportion. These findings are consistent with established clinical descriptions of cellulitis and reaffirm the importance of early recognition of inflammatory signs for timely intervention. A history of trauma was present in 43.4% of cases, reinforcing trauma as a major precipitating factor for infection.

The grading of cellulitis revealed that the majority of patients presented with moderate disease (40.7%), followed by mild (38.6%) and severe cellulitis (20.7%). The relatively high proportion of moderate and severe cases may reflect delayed presentation, poor awareness, or limited access to early healthcare facilities in rural settings. Severe cellulitis poses a greater risk of complications and often necessitates surgical intervention, as observed in this study.

Comorbid conditions played a crucial role in disease severity. Diabetes mellitus was the most common comorbidity, present in 45.5% of patients, either alone or in combination with hypertension. The strong association between diabetes and severe cellulitis was evident, with 46 out of 60 severe cases occurring in diabetic patients. Hyperglycemia impairs neutrophil function, compromises microcirculation, and delays wound healing, thereby predisposing diabetic patients to more severe infections. This finding underscores the importance of strict glycemic control in preventing severe cellulitis and improving outcomes.

Management strategies varied according to disease severity. Conservative treatment alone was sufficient in 62.8% of patients, particularly those with mild to moderate cellulitis. Surgical interventions were required in 37.2% of cases, with incision and drainage being the most common procedure. Debridement and amputation were reserved for advanced or complicated cases. A statistically significant association was observed between the grade of cellulitis and the treatment modality, with increasing severity strongly correlating with the need for surgical management. This highlights the role of early diagnosis and prompt medical treatment in reducing the need for operative intervention.

The duration of hospital stay reflected disease severity and response to treatment. Nearly half of the patients required hospitalization for 7–14 days, while 20.7% had prolonged stays exceeding two weeks. Prolonged hospitalization was more common among patients with severe disease, comorbidities, and those requiring surgical intervention.

Overall outcomes were favorable, with 89.6% of patients achieving recovery either uneventfully or after treatment. Mortality was low (4.2%) but clinically significant, occurring mainly in patients with severe cellulitis and multiple comorbidities. Although conservative management showed a higher proportion of favorable outcomes compared to surgical management, the association between treatment modality and outcome was not statistically significant, suggesting that disease severity and underlying patient factors played a more decisive role than the treatment approach alone.

CONCLUSION

In conclusion, this study highlights that lower limb cellulitis predominantly affects middle-aged and elderly males, with diabetes mellitus emerging as the most important risk factor for severe disease. Early diagnosis, prompt initiation of appropriate antibiotic therapy, and timely surgical intervention when indicated are essential for

improving outcomes and reducing complications, especially in rural healthcare settings.

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