

A PROSPECTIVE OBSERVATIONAL STUDY ON THE ETIOLOGY, CLINICAL, BIOLOGICAL, CLASSIFICATION AND THERAPEUTIC PROFILE OF PATIENTS PRESENTING WITH EDEMATOUS AND TUMEFACTIVE CONDITIONS IN A TERTIARY CARE TEACHING HOSPITAL

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Article Received: 3 March 2026 | Article Revised: 25 March 2026 | Article Accepted: 14 April 2026

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How to cite this Article: Dr. Noona Charitha, K. Naga Jyothi, D. Girija, J. Pavani, K. Manish (2026) A PROSPECTIVE OBSERVATIONAL STUDY ON THE ETIOLOGY, CLINICAL, BIOLOGICAL, CLASSIFICATION AND THERAPEUTIC PROFILE OF PATIENTS PRESENTING WITH EDEMATOUS AND TUMEFACTIVE CONDITIONS IN A TERTIARY CARE TEACHING HOSPITAL. World Journal of Pharmaceutical Science and Research, 5(4), 945-953.



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ABSTRACT

Edematous and tumefactive conditions represent a wide spectrum of clinical presentations ranging from simple fluid accumulation to complex inflammatory and mass-like lesions. The aim of this study was to evaluate the etiology, classification, clinical features, and therapeutic management of such conditions in a tertiary care hospital. A prospective observational study was conducted over six months with 120 patients. Data were collected using patient interviews and clinical records, including laboratory and imaging findings. The results showed that the highest prevalence was observed in the 31–40 years age group, with a slight male predominance. Antibiotics and supportive therapies were the most frequently used treatments, followed by anti-inflammatory agents and diuretics. Non-pharmacological interventions such as dietary modifications and fluid management were also widely implemented. The study highlights the importance of accurate diagnosis and a multidisciplinary approach in the management of edematous and tumefactive conditions. Proper classification and rational therapy significantly improve patient outcomes in tertiary care settings.

KEYWORDS: Edema, Tumefactive conditions, Pharmacotherapy, Inflammation, Tertiary care.

INTRODUCTION

Edematous and tumefactive conditions constitute a broad spectrum of clinical entities that are frequently encountered in medical practice. These conditions range from simple fluid accumulation in tissues to complex inflammatory, infectious, or neoplastic processes presenting as mass-like lesions.^[1] Edema is defined as the abnormal accumulation of fluid in the interstitial spaces or body cavities, resulting from disturbances in the normal balance of fluid exchange between the vascular and interstitial compartments. It is not a disease itself but a clinical manifestation of various underlying pathological conditions affecting multiple organ systems.^[2]

The maintenance of fluid homeostasis in the human body is primarily governed by the principles of Starling forces, which include capillary hydrostatic pressure, plasma oncotic pressure, interstitial pressure, and capillary permeability. Under normal physiological conditions, these forces maintain a dynamic equilibrium between fluid filtration and reabsorption across capillary membranes. Any imbalance in these forces leads to excessive fluid movement into the interstitial space, resulting in edema. Additionally, the lymphatic system plays a crucial role in returning excess interstitial fluid back to the systemic circulation. Dysfunction or obstruction of lymphatic drainage can lead to persistent and progressive swelling, known as lymphedema.^[3]

Tumefactive conditions, on the other hand, are characterized by lesions that mimic neoplastic growths on clinical or radiological evaluation but may represent inflammatory, demyelinating, infectious, or reactive processes.^[4] These conditions pose a diagnostic challenge due to their resemblance to true tumors. For example, tumefactive demyelinating lesions in the central nervous system can closely mimic malignant brain tumors on imaging studies, necessitating careful clinical and radiological correlation for accurate diagnosis.^[5]

The pathophysiology of edema is multifactorial and can be broadly categorized into four major mechanisms: increased capillary hydrostatic pressure, decreased plasma oncotic pressure, increased capillary permeability, and lymphatic obstruction.^[6] Conditions such as congestive heart failure lead to increased venous pressure and subsequent fluid accumulation, while diseases like nephrotic syndrome and liver cirrhosis reduce plasma protein levels, particularly albumin, thereby decreasing oncotic pressure and promoting edema formation. Inflammatory conditions increase vascular permeability through the release of mediators such as histamine, prostaglandins, and cytokines, allowing proteins and fluid to leak into the interstitial space.^[7]

Clinically, edema can be classified based on its distribution (localized or generalized), consistency (pitting or non-pitting), and underlying etiology. Localized edema is often associated with conditions such as trauma, infection, or venous obstruction, whereas generalized edema (anasarca) is typically seen in systemic diseases like heart failure, renal disease, and hepatic disorders. Non-pitting edema is commonly observed in lymphatic obstruction and certain endocrine disorders such as myxedema.^[8]

The clinical significance of edema lies in its role as an important diagnostic indicator of underlying disease processes. Persistent or severe edema may indicate serious conditions such as Congestive Heart Failure, Nephrotic Syndrome, or Liver Cirrhosis, which require prompt medical evaluation and management. In addition, complications such as skin ulceration, infection, reduced mobility, and impaired quality of life may arise if edema is left untreated.^[9]

Management of edematous and tumefactive conditions requires a comprehensive approach involving accurate diagnosis, identification of underlying causes, and appropriate therapeutic interventions. Pharmacological treatment includes the use of diuretics, anti-inflammatory agents, antibiotics, and antihistamines, depending on the etiology.^[10] Non-pharmacological measures such as dietary modifications, compression therapy, limb elevation, and physiotherapy also play a vital role in reducing swelling and improving patient outcomes.^[11]

METHODS

Study Design: Prospective observational study.

Study Site: Government District Hospital, Proddatur.

Study Duration: 6 months (2025–2026)

Sample Size: 120 patients

Inclusion Criteria: Patients of both genders diagnosed with edematous or tumefactive conditions.

Exclusion Criteria: Incomplete patient data and unwilling participants.

Data Collection: Structured proforma including demographics, clinical history, laboratory and imaging data.

Statistical Analysis: Descriptive statistics.

RESULTS

S.NO	AGE	NO OF PATIENTS
1.	0-10 Years	4
2.	11-20 Years	11
3.	21-30 Years	21
4.	31-40 Years	37
5.	41-50 Years	22
6.	51-60 Years	13
7.	61-70 Years	11
8.	71-80 Years	1
	TOTAL	120

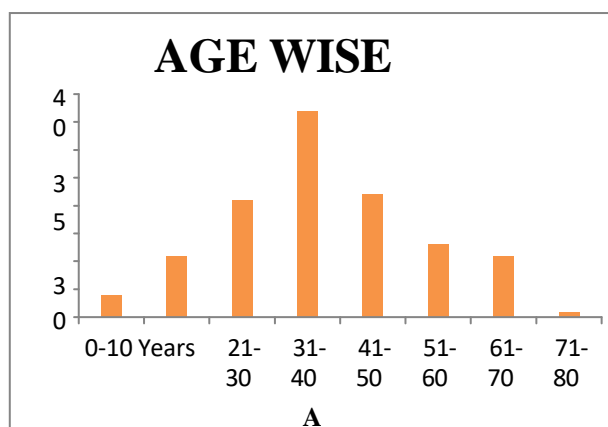


Figure no: 1: Age wise distribution.

A total of 120 patients were included in the study. The majority of patients belonged to the 31-40 years age group (30.83%), followed by 41-50 years (18.33%) and 21-30 years (17.5%). The mean age of the patients was 38 ± 14.5 years, indicating that most cases occurred in the middle - age population.

S.NO	GENDER	NO.OF PATIENTS
1	Male	65
2	Female	54
	TOTAL	120

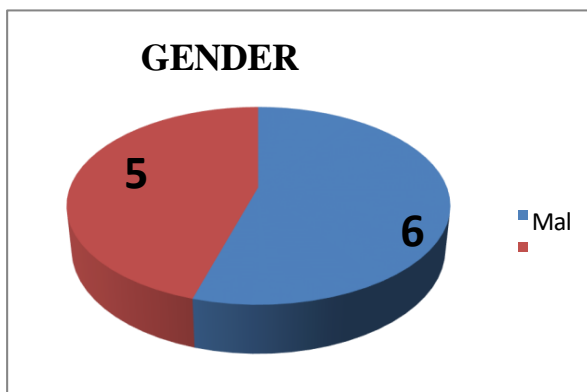


Figure no: 2: Gender Wise Distribution

Out of 120 patients included in the study, 65 (54.16%) were males and 54(45.0) were females. The mean distribution was 59.5 with a standard deviation of ± 5.5 .

S.NO	ETIOLOGY	NO.OF PATIENTS
1	Lipoma	6
2	Inflammatory	17
3	Infectious	36
4	Traumatic	9
5	Hernia	5
6	Cysts	13
7	Renal	7
8	Drug induced	4
9	Cardiac	8
10	Hepatic	4
11	Varicose veins	2
12	Neoplastic	6
13	Endocrine	3
	TOTAL	120

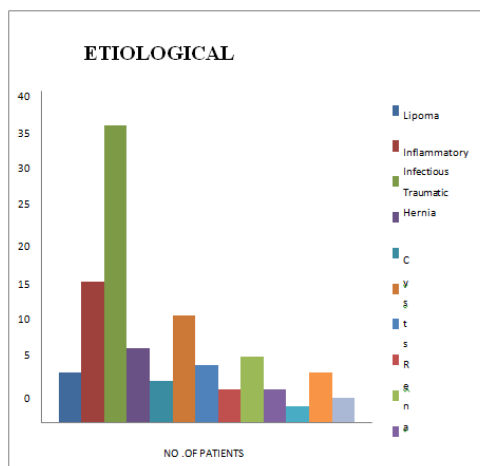


Figure no. 3: etiology wise distribution.

A total of 120 patients were evaluated across 13 etiological categories. The most prevalent factor was infectious (30.00%), followed by inflammatory (14.17%). The statistical distribution of category was 9.23 ± 9.05 .

S.NO	TYPE	NO.OF PATIENTS
1	Pitting edema	39
2	Non pitting edema	34
3	Localized mass	47

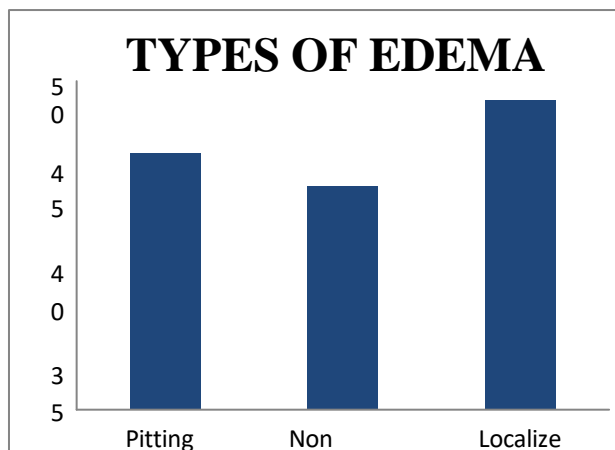


Figure no. 4 – Types of edema distribution

A total of 120 patients were evaluated for the type of presentation. The majority of patients presented with a Localized mass (39.17), followed by pitting edema (28.33%) the mean distribution across these types was 40 ± 6.56 .

S.NO	ASSOCIATED SYMPTOMS	NO.OF PATIENTS
1	Pain	91
2	Fever	44
3	Dyspnea	8
4	Weight gain	19
5	Fatigue	43
6	Redness	42
7	Skin changes	23
8	Functional Limitation	16
9	Others	13

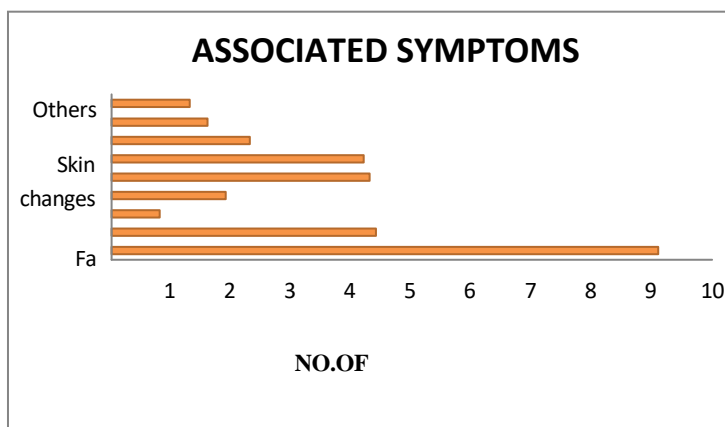


Figure no. 5: Symptoms Wise Distribution.

Laterality Distribution

A total 120 patients were evaluated for clinical manifestations. The most prevalent symptom was pain (75.83%), followed by fever (36.67) and fatigue (35.83%). The mean frequency of symptoms reported per category was 33.22 ± 25.68 , indications high degree of variation in patient presentation.

S.NO	LATERALITY	NO.OF PATIENTS
1	Unilateral	58
2	Bilateral	38
3	Other	24
	TOTAL	120

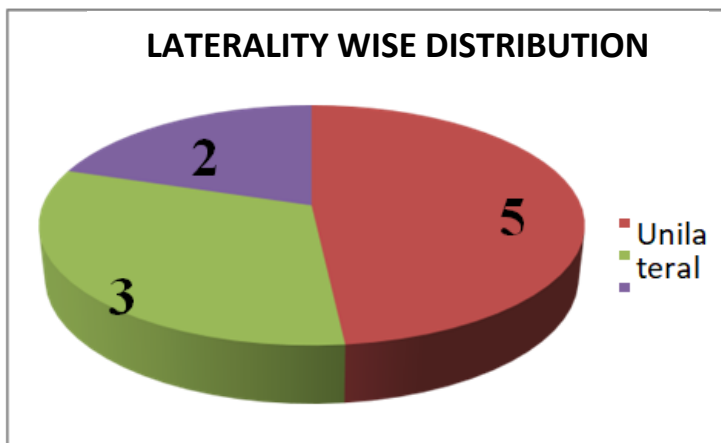


Figure no. 6: Laterality Wise Distribution.

A total of 120 patients were included in the study. The majority of patients presented with Unilateral involvement (48.33%), followed by Bilateral (31.67%) and other (20.00%).

The mean distribution across these categories was 40 ± 17.09 , including a higher prevalence of single sided clinical presentations.

S.NO	CONSISTENCY	NO.OF PATIENTS
1	Soft	72
2	Hard	9
3	Firm	33
4	Fluctuant	6
	TOTAL	120

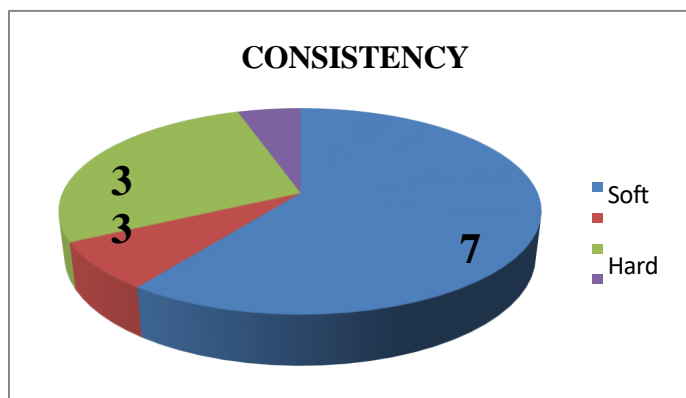


Figure no. 7: Consistency Wise Distribution.

A total of 120 patients were evaluated for the consistency of edema or tumefaction. The majority of patients presented with soft consistency (60%), followed by firm (27.5%). The mean distribution across these categories was 30 ± 30.50 , including that soft consistency is the predominant clinical finding in the study population.

S.NO	DIAGNOSIS	NO.OF PATIENTS
1	CBC	93
2	ESR	45
3	CRP	22
4	LFT	42
5	RFT	39
6	USG Abdomen	50
7	X-ray	32
8	ECG	8
9	CT SCAN	17
10	MRI SCAN	23
11	DOPPLER STUDY	7
12	CYTOLOGY	12
13	OTHERS	8

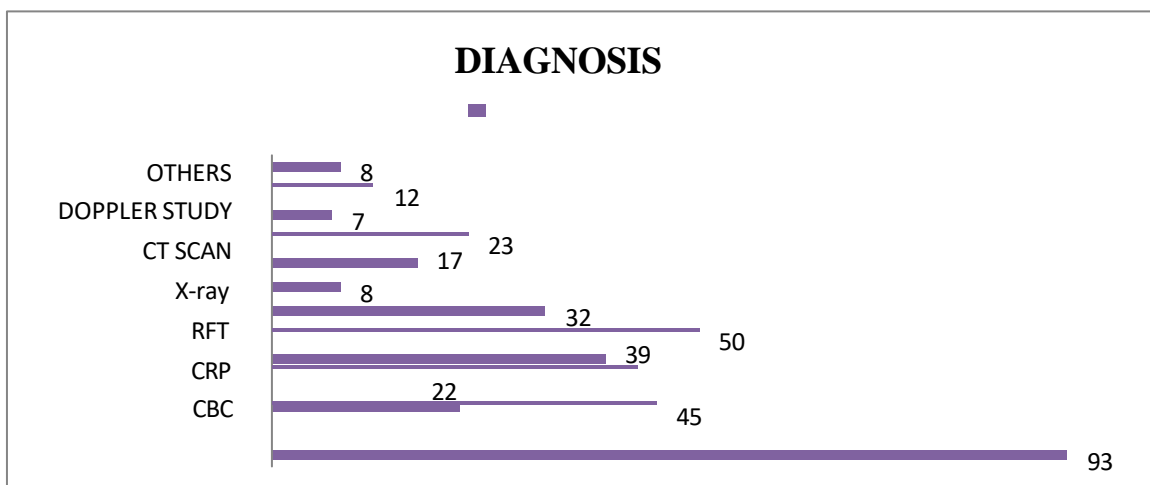


Figure no. 8: Diagnosis wise distribution.

Pharmacological Treatment Distribution

A total of 120 patients underwent various diagnostic investigations. The most frequently performed test was CBC (77.50%), followed by USG Abdomen (41.67%) and ESR (37.50%). The mean frequency of diagnostic tests per category was 30.62 ± 24.02 , reflecting the wide range of laboratory and imaging studies utilized in the clinical evaluation.

SI. NO	PHARMACOLOGICAL TREATMENT	NO. OF PATIENTS
1	Diuretics	30
2	Antibiotics	67
3	Anti-inflammatory drug	45
4	Corticosteroids	23
5	Antihistamines	13
6	Chemotherapeutic agents	3
7	Supportive therapy	64

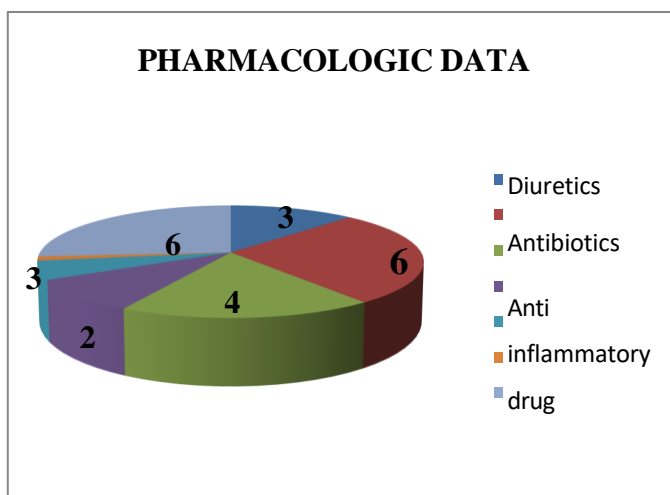


Figure no. 9: –Pharmacological management wise distribution.

A total of 120 patients were included in the study. The most frequently prescribed pharmacological treatments were Antibiotics (55.83%), followed by supportive therapy (53.33%) and Anti – inflammatory drugs (37.50%). The mean distribution across treatment categories was 35 ± 24.64 , including a significant focus on managing infections and providing general supportive care.

S.NO	NON- PHARMACOLOGICAL TREATMENT	NO.OF PATIENTS
1	Limb elevation	23
2	Compression therapy	36
3	Dietary modification	50
4	Fluid resuscitation	40
5	Physiotherapy	19
6	Surgical intervention	31

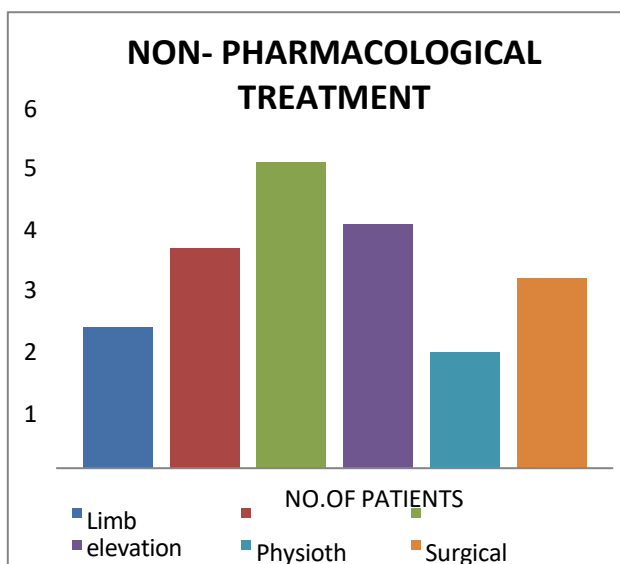


Figure no. 10: Non Pharmacological Treatment Wise Distribution.

Treatment Outcomes Distribution

A total of 120 patients were included in the study. The most frequently utilized non – pharmacological treatment was Dietary modifications (41.67%), followed by Fluid resuscitation (33.33%) and compression therapy (30.00%). The mean distribution across these treatment categories was 33.1 ± 11.37 , reflecting a multifaceted approach to patient management.

S.NO	TREATMENT OUTCOMES	NO.OF PATIENTS
1	Complete resolution	55
2	Partial improvement	65
3	No improvement	0
4	Worsened	0
	TOTAL	120

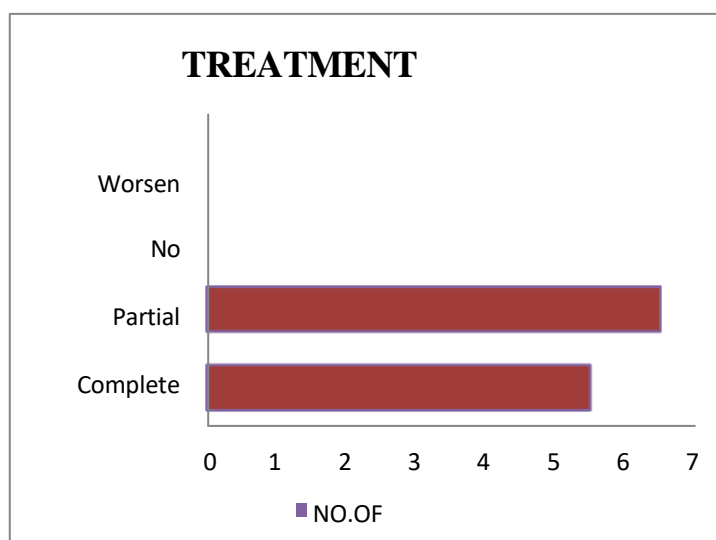


Figure no. 11: Treatment Outcomes wise distribution.

Analysis of treatment outcomes showed that all 120 patients experienced positive results. The majority showed partial improvement (54.17%), while complete resolution was achieved in 45.83% of cases. The mean distribution across outcome categories was 30 ± 34.88 .

DISCUSSION

The present study evaluated 120 patients with edematous and tumefactive conditions in a tertiary care setting. The highest prevalence was observed in the 31–40 years age group, indicating that young to middle-aged adults are more commonly affected. A slight male predominance was noted, which may be attributed to increased exposure to occupational and environmental risk factors.

Infectious and inflammatory conditions were the most common etiological factors, with conditions such as cellulitis and abscesses contributing significantly to localized swelling. Systemic diseases such as Congestive Heart Failure, Nephrotic Syndrome, and Liver Cirrhosis were associated with generalized edema due to disturbances in fluid balance mechanisms.

Pharmacological management primarily included antibiotics, anti-inflammatory agents, and diuretics, depending on the underlying cause. The use of diuretics is supported by the role of Starling forces in edema formation. Non-pharmacological measures such as dietary modifications, fluid management, and compression therapy also played a

significant role in improving patient outcomes.

Most patients showed good clinical improvement with appropriate treatment. However, chronic conditions required long-term management and follow-up. The findings emphasize the importance of early diagnosis, accurate classification, and a combined therapeutic approach.

CONCLUSION

This study concludes that edematous and tumefactive conditions are common clinical presentations with diverse etiologies, predominantly involving infectious, inflammatory, and systemic causes such as Congestive Heart Failure, Nephrotic Syndrome, and Liver Cirrhosis. Early diagnosis and accurate classification are essential for effective management. A combined approach involving appropriate pharmacological therapy and supportive non-pharmacological measures significantly improves patient outcomes.

These findings highlight the importance of a multidisciplinary strategy in optimizing care in tertiary healthcare settings.

ACKNOWLEDGEMENTS

The authors thank the institution and hospital staff for their support.

Conflict of Interest

The authors declare no conflict of interest.

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