FILARIASIS-RELATED ACUTE ADENOLYMPHANGITIS: EXPLORING FACTORS AND TREATMENT OPTIONS

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Keywords:

Acute adenolymphangitis, Lymphatic filariasis, Diethylcarbamazine

Abstract

Aim: This study aims to evaluate the precipitating factors of acute adenolymphangitis (ADL) in patients with lymphatic filariasis and compare the efficacy of various treatment modalities.

Material and Methods: A total of 50 patients were enrolled and randomly assigned to three treatment groups: symptomatic treatment, symptomatic treatment with antibiotics, and symptomatic treatment with diethylcarbamazine (DEC). Data was collected on the number of ADL attacks, presence of infection, and ASO titer levels.

Results: Antibiotics and DEC provided better outcomes, with lower recurrence rates and faster resolution of symptoms.

Conclusion: This study highlights the importance of comprehensive management strategies in preventing recurrent ADL episodes and improving patient outcomes.

Introduction

Lymphatic filariasis, a parasitic disease caused by filarial worms, is endemic in many tropical and subtropical regions. One of the most common and debilitating manifestations of the disease is acute adenolymphangitis (ADL), an inflammatory episode affecting the lymphatic vessels and nodes. ADL presents as painful, swollen, red limbs and is often recurrent in patients with chronic filariasis, leading to long-term morbidity (1). The condition is caused by the presence of adult filarial worms in the lymphatic vessels, which trigger a host inflammatory response (2). While the pathophysiology of ADL is well understood, the precipitating factors and the optimal treatment strategies remain areas of active investigation (3).

Several factors have been identified as potential triggers for ADL attacks, including infections, trauma, and environmental changes (4). Secondary bacterial infections are particularly common and exacerbate the acute inflammatory response (5). Furthermore, certain lifestyle factors such as inadequate hygiene, delayed or inadequate treatment of filariasis, and poor access to healthcare in endemic areas contribute to the

frequency and severity of ADL attacks (6). Previous studies have demonstrated that episodes of ADL tend to be more frequent during the rainy season, which is linked to increased exposure to vectors and environmental stressors (7). These precipitating factors complicate the clinical management of filariasis and increase the burden of disease.

Regarding treatment, the management of ADL typically involves both pharmacological and supportive measures. Antifilarial therapy, including diethylcarbamazine (DEC) and ivermectin, remains a cornerstone of treatment (8). In addition, anti-inflammatory drugs, including nonsteroidal anti-inflammatory drugs (NSAIDs) and corticosteroids, are often used to control the acute inflammatory response (9). The use of antibiotics to treat secondary infections, along with elevating and immobilizing the affected limbs, has been recommended to mitigate the symptoms of ADL (10,11). Despite these strategies, treatment outcomes vary, and there is an ongoing need to optimize management protocols.

This preliminary study aims to identify the precipitating factors of ADL in patients with lymphatic filariasis and to compare the efficacy of various treatment modalities in managing these attacks. By evaluating these factors, we hope to contribute to improved clinical management and better patient outcomes in the future.

Material and Methods

This is a prospective, randomized, observational study conducted at a tertiary hospital to evaluate the precipitating factors of acute adenolymphangitis (ADL) in patients with lymphatic filariasis and to compare the efficacy of different treatment modalities for managing these attacks.

The study sample consisted of 50 patients diagnosed with lymphatic filariasis and experiencing episodes of acute adenolymphangitis. These patients were randomly assigned to one of three treatment groups. The study was conducted over a 19-month period at a tertiary hospital specializing in tropical diseases and filariasis management. Inclusion criteria were:

1. Adult patients aged 18-65 years.
2. Confirmed diagnosis of lymphatic filariasis based on clinical presentation, history of filarial exposure, and diagnostic tests such as antigen detection or microfilaria blood smear.
3. A history of at least one episode of acute adenolymphangitis during the study period.
4. Patients who were willing to provide informed consent to participate in the study.

Exclusion criteria included:

1. Patients with other concurrent chronic conditions that could affect lymphatic function or immune responses, such as diabetes or HIV.
2. Patients who were on chronic immunosuppressive therapy or had a history of malignancy.
3. Patients unable to provide informed consent or participate in follow-up.

Randomization: Upon meeting the inclusion criteria, patients were randomly assigned to one of three treatment groups using a computer-generated randomization list to ensure unbiased allocation. Randomization was done at the time of enrollment, and patients were unaware of their group assignment.

Data Collection: Patient data was collected at baseline and during each ADL episode, using the following methods:

1. Clinical Assessment: A thorough clinical examination was conducted on each patient at enrollment and during each episode of ADL. The following parameters were recorded:
    - Swelling (Edema) Grading:
        - Grade 1: Mild edema, localized swelling, no skin changes.
        - Grade 2: Moderate edema, generalized swelling with slight skin tension.
        - Grade 3: Severe edema, marked swelling with skin tension, and potential ulcerations.
    - The presence and severity of redness, pain in the affected limb, as well as systemic symptoms (fever, chills), were noted. The duration and frequency of ADL episodes were also recorded.
2. Precipitating Factors: Patients were interviewed regarding potential precipitating factors for each episode of ADL. Factors assessed included:

- Recent trauma or injury to the affected limb.
- Infections (bacterial, fungal, or viral).
- Hygiene practices (e.g., bathing, washing of the affected limb).
- Environmental exposures, such as increased rainfall or mosquito bites.
- Changes in immune status or underlying comorbidities.

3. Laboratory Investigations: Blood samples were taken to evaluate the presence of filarial microfilariae and to assess inflammatory markers such as C-reactive protein (CRP) and white blood cell count. Wound or pus cultures were performed for patients with secondary infections.

Treatment Modalities: The study evaluated the efficacy of three different treatment modalities for managing ADL. The treatment groups were as follows:

- Group I (Symptomatic Treatment): Patients in this group received symptomatic treatment, which included:
  - Analgesics for pain relief (e.g., paracetamol, ibuprofen).
  - Antipyretics to manage fever.
  - Antihistamines to reduce inflammation.
  - Topical application of antibiotic or antifungal creams when necessary for any secondary infections or skin complications.
- Group II (Symptomatic Treatment with Antibiotics): Patients in this group received symptomatic treatment along with antibiotics for managing secondary infections. The antibiotics used included:
  - Ampicillin (250 mg to 500 mg every 6 hours) and Cotrimoxazole (a combination of sulfamethoxazole and trimethoprim, 160 mg/800 mg every 12 hours) for 5 days or more, based on the severity of the infection.
- Group III (Symptomatic Treatment with Diethylcarbamazine - DEC): Patients in this group received symptomatic treatment along with the antifilarial drug Diethylcarbamazine (DEC). The dosage regimen was:
  - DEC 100 mg three times a day for 12 days, with the treatment repeated every 3 months for a year.
- Group IV: symptomatic treatment with along with antibiotics followed by DEC.

Treatment Outcomes: The treatment outcomes were assessed based on the following criteria:

1. Resolution of Symptoms: The resolution of symptoms, including swelling, pain, and redness, within 7 days of starting treatment.
2. Frequency of ADL Episodes: The number of ADL episodes experienced by patients during the 6-month follow-up period.
3. Recurrence of ADL: The occurrence of any subsequent ADL episodes during the study period.
4. Secondary Infections: The occurrence and resolution of any secondary infections in patients during treatment.

Follow-up: Patients were followed up monthly for 6 months and one year after their initial treatment. During each follow-up visit, the recurrence of ADL episodes and any new episodes were documented, and the long-term effectiveness of treatment strategies was evaluated.

Data Analysis: Data was analyzed using descriptive statistics to summarize baseline characteristics, precipitating factors, and treatment outcomes. The efficacy of different treatment modalities was compared using analysis of variance (ANOVA) for continuous variables and chi-square tests for categorical variables. A p-value of < 0.05 was considered statistically significant.

Ethical Considerations: The study was conducted in accordance with ethical principles outlined in the Declaration of Helsinki. Written informed consent was obtained from all participants, and the study was approved by the institutional ethics committee. Patient confidentiality was maintained throughout the study.

Results

Table 1 shows the relationship between the number of ADL attacks, infection presence, and ASO titer levels in relation to the grade of edema. Patients with Grade I edema had 1-2 attacks in the past year, with 22.9%

showing infection and 22.9% having an ASO titer >200 IU. For Grade II edema, 30.5% had infections, and 30.5% had high ASO titers. In Grade III edema, 46.6% had infections and high ASO titers, with most patients experiencing more than 5 ADL attacks.

Table 2 compares the response to antibiotics versus symptomatic treatment. In the **antibiotic group** (n=33), 24 patients showed a rapid response (within 5 days), while 9 had a delayed response (taking more than 5 days). In the **symptomatic treatment group** (n=17), 10 patients responded rapidly, and 7 had a delayed response.

Table 3 shows the recurrence of ADL at the 6-month and 1-year follow-up in relation to the treatment regimen. At the 6-month follow-up (n=45), **Group I** (symptomatic treatment) had the highest recurrence, with 6 cases, including 1 injury and 3 cases of moniliasis. **Group II** (symptomatic with antibiotics) had 2 recurrences, including 1 injury and 3 cases of moniliasis. **Group III** (symptomatic with DEC) had 1 recurrence, with no injuries and 2 cases of moniliasis. **Group IV** (combined treatment) had 4 recurrences, including 1 injury and no moniliasis. At the 1-year follow-up (n=20), **Group I** had 2 recurrences (1 injury and 4 cases of moniliasis), **Group II** had 1 recurrence (1 injury and 2 cases of moniliasis), **Group III** had 1 recurrence (1 injury), and **Group IV** had 2 recurrences (1 injury).

Table 1: Number of ADL attacks in the past year, presence of infection and ASO titer in relation to grade of edema.

Grade of edema (n=50)	Number of ADL attacks in the immediate year				Presence of infection (n=25)	ASO >200 IU (n=33)
	None (n=8)	1-2 (n=21)	3-4 (n=11)	>5 (n=10)		
I (n=24)	8	12	1	1	6	11 (22.9%)
II (n=18)	0	8	6	2	12	11 (30.5%)
III (n=8)	0	1	4	7	7	11 (46.6%)

Table 2: response to antibiotics vs symptomatic treatment

Response	Antibiotic group II and IV (n=33)	Symptomatic group I and III (n=17)
Rapid < 5 days	24	10
Delayed > 5 days	9	7

Table 3: Recurrence of ADL in relation to treatment regimen at the 6th month and one year follow up.

At 6 months follow up (n= 45)	No. with recurrence	Injury	Moniliasis
Group I (n=11)	6	1	3
Group II (n=13)	2	1	3
Group III (n=7)	1	0	2
Group IV (n=14)	4	1	0
At 1 year follow up (n= 20)			
Group I (n=3)	2	1	4
Group II (n=6)	1	1	2
Group III (n=4)	1	1	-
Group IV (n=7)	2	1	-

Discussion

The present study evaluated the precipitating factors and treatment outcomes for acute adenolymphangitis (ADL) in patients with lymphatic filariasis. The findings highlight the varied treatment responses and the relationship between the severity of edema and clinical outcomes. In this study, the response to antibiotics

and symptomatic treatment differed significantly, with the antibiotic group showing faster resolution compared to the symptomatic treatment groups.

Patients with higher grades of edema, particularly those in **Grade III**, experienced more recurrent ADL attacks and had a higher incidence of infections, which is consistent with the findings of previous studies that demonstrate a relationship between severe lymphatic damage and increased risk of secondary infections (12). The presence of moniliasis and injuries as complications in the higher-grade edema groups may further complicate the treatment and recovery process, as fungal infections are common in immunocompromised or lymphatic-damaged patients (13). These findings are in line with prior reports that emphasize the role of secondary infections in worsening the prognosis of filariasis and ADL (14).

The efficacy of antibiotics, particularly in reducing the recurrence of ADL and controlling infections, was evident in **Group II**, where a majority of patients experienced a rapid response to treatment. This supports previous work suggesting that antibiotics, when appropriately used, can mitigate complications such as secondary bacterial infections, which are a common trigger for ADL attacks (15). However, the symptomatic treatment group, which primarily received pain management and anti-inflammatory drugs, showed slower recovery, reflecting the need for more comprehensive therapy in managing acute episodes of ADL.

Regarding **Group III** (symptomatic treatment with DEC), the low recurrence rates observed at both the 6-month and 1-year follow-up suggest that DEC plays a key role in controlling the underlying filarial infection, potentially reducing the frequency and severity of ADL episodes. This is consistent with previous studies that emphasize the importance of antifilarial drugs like DEC in both the treatment and prevention of ADL attacks in patients with chronic filariasis (16).

Moreover, the high recurrence rates in **Group I** (symptomatic treatment alone) further underscore the importance of integrating antifilarial therapy and infection control strategies for better long-term management of ADL. Although the use of symptomatic treatment alone may offer short-term relief, the recurrence of symptoms in the absence of targeted antifilarial therapy may lead to prolonged morbidity (17).

Conclusion

In conclusion, the results of this study suggest that a combination of symptomatic treatment and appropriate antibiotics, along with antifilarial therapy, provides the most effective approach in managing ADL in lymphatic filariasis. Further studies, particularly those involving larger sample sizes and long-term follow-up, are needed to refine treatment protocols and explore additional factors influencing treatment outcomes.

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