

Leech Bite and Lymphangitis: An Unknown or Under-Reported Entity?

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ABSTRACT

Background: Lymphangitis following leech bite is an under-reported entity. Infectious complications following medicinal leeching have been documented in literature with rates varying between 2.4% to 20%. Infections are the most common cause of lymphangitis, even though a variety of other etiologies have also been cited in literature.

Methods: An observative study of five patients who was admitted to a peripheral surgical center during nine months period from August 2018 to April 2019 was carried out and an analysis with respect to their clinical presentation, laboratory parameters and treatment modality undertaken has been documented.

Results: Five patients who sustained leech bite followed by lymphangitis were included in the study. The mean age of the patients was 35.6 years. The symptoms reported were erythematous streak over the skin from the site of leech bite extending proximally, pain, fever and lymphadenopathy. The laboratory parameters were normal except one who had leukocytosis. The treatment modality advocated was intravenous or oral 2nd generation cephalosporins along with analgesics and supportive treatment. All of them were discharged after five days of antibiotic therapy when they were asymptomatic.

Conclusion: Though lymphangitis following leech bite is an under-reported entity, the cause of the same in wild has to be studied in detail with respect to isolation of the offending pathogen. The same may prove beneficial in areas of leech infestation where this entity must be more common and a standard treatment modality as well as precautionary measures can be formalized.

Keywords: Leech, Lymphangitis, Lower limb, Leeching, Vector

INTRODUCTION

Lymphangitis refers to an inflammation of the lymphatic ducts at the cutaneous as well as subcutaneous tissue. [1] The plethora of etiologies include bacterial and fungal infections, secondary to malignancies, allergen-related, bug-bites, in extremities following trauma and rarely due to photodermatitis. The classical presentation is a rash associated with sensitivity along the line of distribution of superficial lymphatic ducts. Enlargement of lymph nodes, pruritus and discharge can also be associated symptoms. Advanced cases also present with features of cellulitis. The most common cause of acute lymphangitis is Streptococcal infection after skin damage. [2,3] Non-infectious causes of lymphangitis are a poorly documented entity. Though arthropod-borne cases of superficial lymphangitis are documented, [4] leech bite as a cause of lymphangitis has been an under recognized entity.

Leeches are segmented hermaphrodite worms which live in fresh water. Being multi-segmented, each segment has different organs such as ganglions and testicles. There are two sucker parts which help the organism for creeping and adherence; the anterior one has three jaws including many teeth. [5] Usually the warm parts of the hosts are preferred and rhythmic contractions of the body of the organism helps in sucking the blood of the host. [6] The usual feeding is about 40 minutes and a leech can digest up to 15 mL of blood per feeding. Enzymes and microorganisms such as *Aeromonas*

hydrophila and *Pseudomonas hirudinia* help in the digestive process. [7,8]

Leeches have been used for medicinal purposes dating back to ancient Egypt and beginning of civilization. The use of leech became so popular to the extent that the species became endangered in Europe in the early 19th century. However, the leech had lost its popularity by the end of 19th century as their therapeutic use fell out of favor with physicians and patients. There has been greater emphasis on emerging modern concepts of medicine. [9] *Hirudo medicinalis* and *Hirudo verbana* are the two species commonly used in medical field. [10] The recent rediscovery of medicinal leeches has been linked to maxillofacial and other microsurgions. In the present era, leeches have been used to aid salvage of compromised venous engorged tissue, including free and pedicled flaps, amputated digits, ears and nasal tips. [11-13]

The costs of employing leech for medicinal therapy do come with complications too. Literature cites the rate of infection following leeching from 2.4% to 20%. [14,15] *Aeromonas hydrophila* and *Aeromonas veronii* biovar *sobria* constitute the intestinal flora of leech, aiding in digestion of RBCs. [16] Infectious complications have been documented in literature following leeching, commonest causative organism attributed being *A hydrophila*. [17] Other pathogens which have been isolated from wound infection following leech therapy are *A sobria*, [18] *Serratia marscecens* [19] and *Vibrio fluvialis*. [20] Even though hemorrhage following leech bite is a known complication following leech bite (both medicinal and non- medicinal), cases of ecchymoses and various skin lesions have also been documented. [21] In this article we present a series of five cases of lymphangitis following leech bite.

MATERIALS AND METHODS

Observational study of five patients who presented to the Surgical outpatient department of a peripheral hospital over a

period of nine months from August 2018 to April 2019 was done. The patients included were diagnosed based on history of leech bite prior to onset of symptoms and classical presentation of reddish streaks over the skin extending proximally from the site of leech bite, with or without lymphadenopathy. All five patients were admitted to the hospital and observed till their symptoms resolved. The clinical and laboratory parameters, treatment modality and length of stay were recorded. The clinical parameters included age of the patient, comorbidities if any, site of leech bite, presenting symptoms and day of onset following bite. The laboratory parameters included basic hematology and biochemistry. The treatment undertaken was either intravenous or oral antibiotics with supportive care.

RESULTS

Table 1: Demographics

Parameter	n=5	%
Mean Age (in years)	35.6	-
Mean delay in onset of symptoms (in days)	03	-
Symptoms		
Erythematous streak over the skin	05	100
Localized reaction at the site of bite	02	40
Pain	05	100
Fever	01	20
Signs		
Lymph node enlargement	03	60
Average Length of hospital stay (in days)	05	-

Table 2: Laboratory parameters

Parameter	n=5	%
Leucocytosis	1	20
Deranged Hepatic Profile	0	0
Deranged Renal profile	0	0
Deranged Blood Sugar	0	0

Table 3: Treatment

Modality	n=5	%	Average duration (in days)
Intravenous Antibiotic	04	80	05
Oral Antibiotic	01	20	05
Analgesics	05	100	03

DISCUSSION

During the study period of nine months (August 2018 to April 2019), five patients were admitted with lymphangitis following leech bite. The age of patients ranged from 28 to 54 years with mean age being 35.6 years. The average delay in days of onset of symptoms following leech bite was three days. Four of them sustained leech bite along the lower limbs while one

had the bite over right upper limb. The commonest symptoms were erythematous streak along the skin of the affected limb from the site of bite extending proximally and pain (n=5). The other symptoms were fever (20%) and local reaction at the site of leech bite (40%) (Table 1). Lymphadenopathy of the draining inguinal lymphnodes of the affected side was found in three patients. The laboratory parameters were more or less normal including hematology and biochemistry except one patient who had leukocytosis (Total Leucocyte Count 12500/cmm) (Table 2).



Figure 1: Lymphangitis along Right Upper Limb

All five patients were admitted and managed with either intravenous antibiotics (80%) or oral antibiotics (20%) along with analgesics and supportive care. Antibiotics were given for a duration of five days. One patient who was given oral antibiotic had reported a week after leech bite and the symptoms had more or less subsided by the time he presented. All of them were given second generation Cephalosporins along with anaerobic cover. The analgesics for three days and stopped once patients were symptomatically better and the lymphangitis had started resolution (Table 3). The average length of hospital stay was five days.

CONCLUSION

Leech bite causing infectious complications have been documented in literature and the same have been attributed commonly to *A hydrophila* in medicinal leech therapy.^[17] Cases have been documented with leech bite causing palpable purpura and pruritus in Australian Rainforest,^[22] the inciting agents being described as hirudin and histamine. Terrestrial leeches (*Haemadipsidae*) have also been identified as a vector of trypanosomal infection.^[23] In an experimental study to identify the role of leeches as vectors for human and animal pathogens, 11 different species of bacteria, HIV and Hepatitis B virus were isolated from leeches. Protozoan parasites including Plasmodium have been found to survive inside the gut of leeches. The transmission in to humans are likely due to manipulation or squeezing the leeches while they are sucking blood.^[24]

Lymphangitis attributed to leech bites, though not documented in literature is likely due to bacterial pathogens surviving inside the leech gut. It can also be attributed to secondary infection of the skin damaged by leech bite where in Streptococcus infection is one of the most common cause of lymphangitis. Studies in leech endemic areas will be required to identify the exact pathological mechanism in terms of isolation of the pathogen, biopsy of the site of bite, cultures and microscopic studies. Most of the cases may go under-reported owing to the fact that the lymphangitis might be self-resolving without any pharmacological treatment. It is imperative that detailed studies be carried out to throw light on to leeches being active carriers of infections so as to formalize treatment plans as well as develop precautionary measures to avoid transmission to humans.

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