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IMPLICATIONS OF CUTANEOUS LARVA MIGRANS AND ITS MANAGEMENT IN A PATIENT WITH COEXISTING FILARIAL LYMPHOEDEMA IN SOUTHERN SRI LANKA

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Introduction

Lymphatic filariasis (LF) is a leading cause of disability. Skin breaches due to trauma or dermatoses act as entry points for pathogenic bacteria, causing progression of lymphoedema [1]. We report a case of cutaneous larva migrans (CLM) and its implications in a patient with filarial lymphoedema.

Case report

A 28-year-old married female from Habaraduwa, presented to the Filariasis Research Training and Services Unit (FRSTU), University of Ruhuna for further evaluation of left sided ankle oedema of one-month duration, after being found positive for anti-filarial IgG antibodies (FAT). The oedema did not reverse completely on limb elevation. She didn't experience episodes of lymphangitis or adenitis. However, she complained of a gradually expanding, intensely pruritic rash, over bilateral soles, of five days' duration (Figure 1: clinical timeline). She has been a seamstress at a garment factory in Koggala for eight years and works eight-hour shifts in the standing position. Her source of bathing water is a well, situated about 100m from her house, towards which she usually walks barefoot. She does not own pets but her garden is unprotected garden is frequented by stray dogs and cats.

On examination, she was afebrile and bilateral lower limb grade 2 pitting oedema was observed, more pronounced on the left. There were no skin changes, varicose veins, ulcers or cellulitis. Inflamed serpiginous tracts with entry points and erythematous papules were visible on the

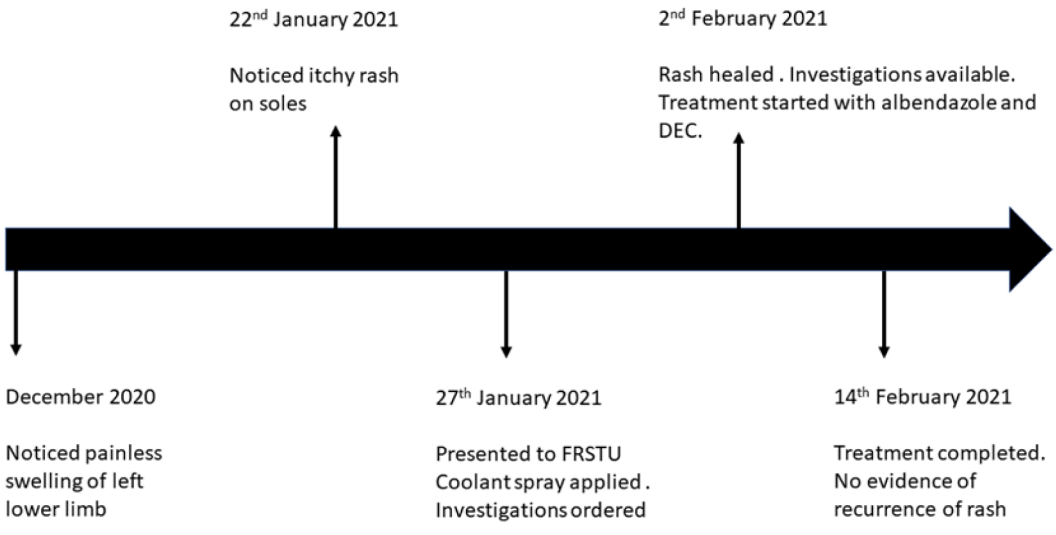

Figure 1. Timeline of important clinical events.

medial plantar aspect of both feet (left more affected); Figure-2A. Onychomycosis involving the left big toe, bilateral web space fungal infections and cracked skin were observed (Figures-2B-C). Inguinal lymph nodes were not enlarged. She was weakly positive for *Wuchereria bancrofti (Wb)* AD-12 antigen by the Filariasis Test Strip (FTS). Full blood count, erythrocyte sedimentation rate, C-reactive protein, liver functions, renal functions and fasting blood sugar were normal. Urine hCG by strip test was negative. Skin thickness ultrasound measurements were; L/lateral-0.280cm, L/medial-0.548cm; R/lateral-0.239cm, R/Medial – 0.297cm. Limb circumference measured by infra-red 3D scanning at 12, 20 and 30 cm limb height respectively (in cm) were; L-21.6, 26.4, 34.5 and R- 21.1, 26.7, 34.6.

A coolant spray, was applied to bilateral soles, following which the patient's symptoms improved (Figure-1D). She was started on diethylcarbamazine citrate (DEC) 6mg/kg daily for 12 days and albendazole 400mg single dose. Entry lesions were managed with miconazole, soframycin, and 15% urea application for cracked skin. Patient was trained on morbidity management and disability prevention (MMDP) protocol, which includes limb hygiene, managing entry lesions, elevation, exercise and limb protection [2]. She is being followed up at FRSTU.

Discussion

LF was eliminated from Sri Lanka as a public health problem in 2016. Ongoing low-level-transmission of bancroftian filariasis is reported in several minor foci such as Habaraduwa and Koggala while brugian filariasis is reported sporadically [3]. 891 new cases of lymphoedema (no hydroceles) were reported locally in 2019 (Personal Communication, Director, Anti Filariasis Campaign). Although the annual mass drug administration from 2002-2006 contributed to disease elimination, cases are still seen due to the chronic, nonfatal, heterogeneously distributed nature of the disease. Diagnostic tests tend to be negative in people with chronic sequalae, as it occurs due to the immune response upon parasite clearance [1]. This patient was non-pregnant and lacked features of cardiac, hepatic or renal disease. Living in an endemic focus, and working night shifts probably increased her exposure to the vector, *Culex quinquefasciatus*. Oedema may have persisted longer as it was staged grade 2 at first contact. Positive filarial antibodies only indicate past exposure, but positive FTS, indicated the presence of adult worms, warranting treatment [1]. Regrettably, night blood filming for microfilaraemia was not performed due to patient's busy work schedule.

Progression of lymphedema and development of elephantiasis are complications of LF which occur secondary to repeated acute dermato-lymphangio adenitis (ADLA) episodes [1,2]. Interdigital fungal infections, paronychia, injuries and eczema act as entry lesions for bacteria [1,2]. The lesions on the soles were clinically diagnosed as Cutaneous Larva Migrans (CLM),

Figure 2.

A = Left foot before treatment; shows serpiginous tracts of cutaneous larva migrans

B = Entry lesions of left foot

C = Onychomycosis of left big toe

D = Healed lesions of cutaneous larva migrans, one week after treatment with coolant spray

a zoonosis caused by dog and cat hookworms; *Ancylostoma braziliense, A. caninum* and *Unicaria stenocephala* [1]. Third stage larvae penetrate skin on contact with contaminated soil, and creep, causing serpiginous tracts in the epidermis. Walking barefoot in her garden, probably contaminated with animal faeces, supports acquisition. Being intensely pruritic, bacterial superinfection is frequent, thus providing a portal of entry for pathogenic bacteria [1,4]. We did not find published literature on CLM acting as an entry lesion in filarial lymphedema. However, bacteria (endosymbionts) carried by the larva or secondary bacterial infections due *Streptococcus pyogenes* may cause cellulitis [4] and can lead to ADLA in patients with lymphoedema; this was prevented in this case by timely interventions.

Topical thiabendazole (crushed oral tablets) for small lesions [4] or single dose oral ivermectin for larger lesions are usual treatments of choice [1]. However, both are not licensed in Sri Lanka. Inefficient absorption and tissue penetration necessitate up to a 7-day course of oral albendazole [1]. Quick healing was necessary in this young, yet self-negligent patient to prevent complications. Coolant spray (contains pentane, butane and propane) used by sportspersons for acute injuries to prevent internal bleeding and oedema has been successfully used at FRTSU for CLM, and was found to be effective in this patient as well. The aerosol spray has the advantage of covering the entire lesion compared to liquid nitrogen which is only applied to the edge of the lesion [4]. Coolant spray is applied only till pain is felt compared to the specified time of application of cryotherapy, thereby preventing burns, which can act as entry lesions and cause ADLA.

Management of other entry lesions and follow up will be beneficial in the long run especially since prolonged standing aggravates her lymphoedema. This case reiterates the importance of footwear and proper management (in limited resource setting) of common, easily diagnosed, yet neglected parasitic dermatoses in patients with lymphoedema.

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