

Strongyloides 'Larva Currens' Following High Dose Dexamethasone for Upper Airway Burns: A Case Report and Brief Review of the Literature

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Abstract

This case report describes a case of *Strongyloides* 'Larva currens' following high dose dexamethasone for upper airway burns following a fat fire. The patient who was originally from Samoa had been living in New Zealand for over 30 years. This case report reviews the literature surrounding *Strongyloides* hyperinfection and *strongyloides* in Samoa.

Keywords: *Strongyloides*; Larva currens; Hyperinfection; Samoa; Immunosuppression; Burns

Case Report

A 58-year-old Samoan man who had been living in New Zealand for over 30 years with no other overseas travel, presented to our Hospital following cooking fat and flame burns to both hands and his face. On examination he had deep dermal burns to the dorsal left hand, and more superficial burns to his right hand and face with total body surface area burns of 4%. He was also noted to have burns to his nasal passages and oropharyngeal mucous membranes as a result of hot gas and smoke inhalation.

He was treated with intravenous dexamethasone 8 mg twice daily for his airway burns, and received 5 doses in total. He underwent surgical debridement of his left hand burn and split skin grafting under general anaesthesia. On day 6 of admission he spiked a fever of 38 degrees celsius. He complained of an acute pruritic rash on his right flank. He denied abdominal pain or diarrhoea. On examination, his chest was clear on auscultation. He had a characteristic papular, seriginous rash with a surrounding red flare on his right flank. The rash had a classical appearance of 'larva currens'. An elevated eosinophil count of $0.6 \times 10^9/L$ (8%) was also noted from his admission full blood count. A chest x-ray taken was unremarkable. A blood sample was taken and sent for *Strongyloides* serology. The 'larva currens' rash dissipated after several hours.

His skin graft was successful and he was discharged home. His *Strongyloides* serology EIA (Bordier affinity *Strongyloides ratti*) test was strongly positive with an IgG EIA ratio of 2.02 (positive >1.2). He was referred to an Infectious Diseases Physician and was treated for *Strongyloides* infestation with a course of oral Ivermectin 200 µg/kg for 2 days.

Strongyloides is a parasitic nematode that causes the parasitic infestation Strongyloidiasis. This soil-transmitted helminth can reproduce indefinitely in the warm and moist soils of tropical countries. If the larvae comes into contact with human skin, (e.g. barefoot walking on soil) it can penetrate through to enter the circulation [1]. From the circulation, it migrates from the lung capillaries, penetrating the alveoli and into the respiratory tract, then

migrates into the gastrointestinal tract [1]. The larvae develop in the duodenum and jejunum and produce ova, which hatch in the Gastrointestinal tract. The hatched larvae pass with stool and thrive in warm moist soil awaiting contact with the next hosts' skin [1].

Strongyloides is unique to other soil transmitted helminths', (e.g. hookworm and roundworm) in that its larvae may 'autoinfect' the host by invading through the bowel mucosa or the perianal skin [1]. This allows the parasite to complete its life cycle independent of an external soil lifecycle and the host may be infected for decades [1,2]. 'Larva currens' is an urticarial type rash resulting from of a localised allergic response to the parasite larvae migrating through the skin in cases of autoinfection. The rash of 'larva currens' occurs on the trunk, moves quite rapidly (2-10 cm/h), is not indurated and has a red flare and disappears in hours [1]. 'Larva currens' was reported in Allied prisoners of the Second World War more than 37 years after exposure, often, in times of immunosuppression [2].

Strongyloides infestation in patients with immunosuppression may result in a disseminated 'hyperinfection' [1,3,4]. In the process of autoinfection from the GI tract, the parasite may introduce bacteria into the bloodstream and cause a Gram negative bacteraemia and sepsis [1]. Respiratory symptoms and signs have also been ascribed to the parasites journey through the respiratory tract, causing a form of 'Löffler's syndrome' [1,5]. Diagnosis is usually by stool microscopy of the larvae, however serology tests are rapid, easy to perform and highly sensitive and specific for the diagnosis of strongyloidiasis [1,6-8]. Furthermore, seroreversion has been demonstrated in response to eradication with Ivermectin, indicating positive serology is consistent with a current infestation [9].

Very little has been published on the prevalence of *Strongyloides* in Samoa. It is however known to be present throughout the South Pacific Islands including Samoa [3,9,10]. Literature on *Strongyloides* in New Zealand is also scarce. While not endemic to New Zealand [11], a handful of case reports of *Strongyloides* infections occurring in immunocompromised individuals are noted [12-14]. It has also been detected in refugees screened on entry to New Zealand, and in Soldiers and Police officers returning from deployment in endemic countries [15-18]. It is entirely possible therefore that many people living in New Zealand who are from or have visited endemic countries have an undiagnosed *Strongyloides* infection.

It is highly likely that our patient's 'larva currens' was triggered by the immunosuppressive effects of high dose dexamethasone. Interestingly, our patient could not recall any similar rash in the past or any chronic abdominal symptoms. This case report illustrates the potentially unrecognized burden of Strongyloides in New Zealand, and the potential for it to cause complications in immunosuppression. Doctors should be mindful of Strongyloides infection in patients from, or who have lived in endemic countries when prescribing immunosuppressive medications.

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