Cutaneous larva migrans–Report of three probable cases

K. Hanjeet, MBBS, DAP & E, MPH
C. K. Ow Yang, BSc, PhD, DAP & E
Parasitology Division
J. W. Mak, MBBS, MD, DAP & E, MPH, MRCPath
Head, Malaria & Filariasis Division

Institute for Medical Research, Kuala Lumpur

Summary

Three probable cases of cutaneous larva migrans are presented. The clinical presentation, serological findings and response to treatment are described.

Key words – Cutaneous larva migrans, serological findings, creeping eruptions.

Introduction

Larva migrans denotes the prolonged migration of a larval parasite in the skin or intestinal organs of an abnormal host, usually man.[1] There are two types of larva migrans. Visceral larva migrans is the more common type mostly caused by larvae of dog and cat ascarids of the genus *Toxocara.*[2] A few cases of Cutaneous larva migrans have been reported from Malaysia[3] and Singapore,[4,5] though it has been widely reported in Florida,[6] Texas[7] and Australia.[8] Both types may be more common in Malaysia than generally thought. Cutaneous larva migrans can also be caused by human species of nematodes in the immune human host or by animal species of nematodes in immune as well as non-immune humans.[1]

Cutaneous larva migrans, also known as creeping eruptions, generally appear on the feet, buttocks and hands but are more commonly seen on the feet and legs. It could affect any person who accidentally comes in contact with the nematode filariform larva of the family *Ancylostomatidae,* especially so if it is an animal species. The animal species commonly involved are *Anclyostoma braziliense* and *Ancylostoma caninum,* both hookworms of cats and dogs.[9] It is characterized by a linear, serpiginous, erythrematous eruption prroduced by migration of larva within the skin in between the stratum corneum and the stratum granulosum.[10] These larvae do not multiply or reach maturity within the skin of man, but migrates without any established pathways and eventually perish.

Case 1

A seventeen year old Chinese male reported with severe pain and itchiness of both feet. He presented with bullous swellings near the left big toe and a few tortuous lesions on his feet, both on the dorsal and plantar surfaces, with spots of black burn marks. (Fig. 1 & 2). He had gone for a picnic to Port Dickson with a group of friends about 10 days earlier. On returning from Port Dickson he developed itchiness of his feet which he ignored until the next day when he noticed a few tortuous lesions appearing on his feet which were very itchy and painful.

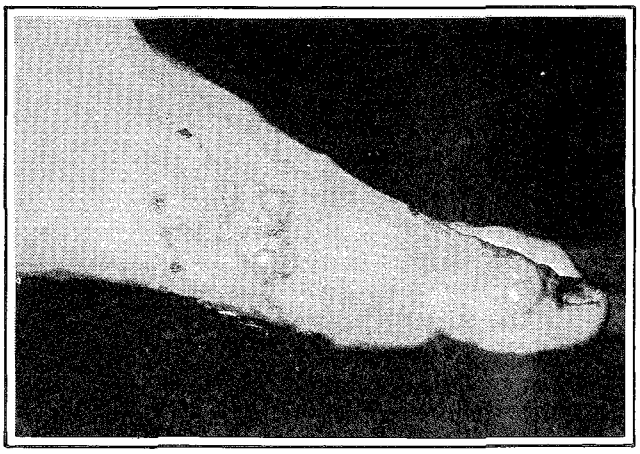

Fig. 1
Photograph showing the serpiginous eruptions, bullous swelling and the black burn marks on the left foot in case 1.

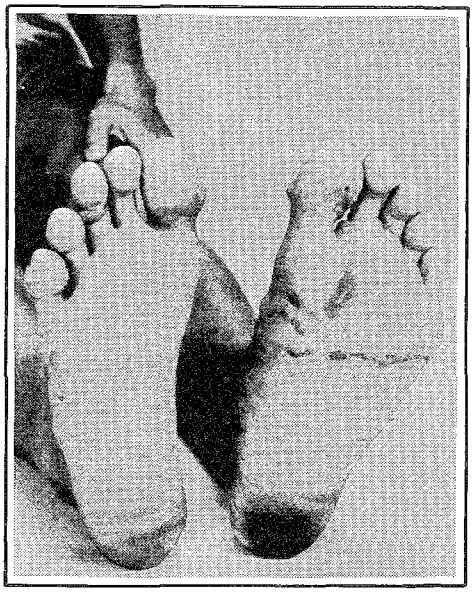

Fig. 2
Photograph showing the plantar surface of the left foot of the same case.

He had bullous swellings filled with clear fluid which started to appear on the third day. These swellings were very painful. Pricking the bullous swellings to release the fluid gave some relief. However, new ones appeared. These were reddish black in colour and by the next day had advanced to new areas over the feet. Based on Chinese traditional belief that the symptoms were due to "snake disease", the patient tried to burn the 'snake' at the advancing end of the lesion with joss sticks, causing the black burn marks (Fig. 1). As the lesions did not subside, he decided to seek medical treatment ten days after the start of the lesions.

The patient was treated with diethylcarbamazine citrate (DEC) 50mg thrice daily for one week together with an antihistamine for the itchiness. At the end of the week there was some improvement but the larvae continued to migrate. He was continued on the same treatment for another week. At the end of the 2nd week of treatment he still had one migrating larva. The patient was given a further week of treatment which completely cured him. A pretreatment blood sample was obtained and the Indirect Flourescent Antibody (IFS) test carried out using frozen sections of adult *A. caninum*. Pretreatment and post-treatment blood samples were taken for the IFA test. Both IFA titres were 1:64.

Case 2

This case was a seventeen year-old Chinese girl who had been on the same trip as Case 1. She had only one tortuous lesion with about six specks of reddish black marks on her right foot and no lesions on her left foot. Two of the black marks were joss sticks burn marks while the other four appeared similar to the other tortuous lesions, except that they did not advance any further. Two of these specks were on the planter surface while the rest were on the dorsum of the foot. The tortuous lesion started from the web of the middle and the 2nd toe and advanced towards the dorsum of the right foot. It had no bullous swellings but it was very itchy. She was also treated with DEC as in Case 1. After a week the reddish black marks had subsided but the tortuous lesion was still progressing. She was given DEC at the same dosage for another week. During the second week of treatment, the lesion was still active and it was discovered that she had not taken the medicine regularly. She was advised to finish all the antihelminthic and on review after a week there was full recovery. The pre-treatment IFA titre was 1:16. Unfortunately a post-treatment sample was not available.

Case 3

This was another 16 year old Chinese male who had also gone for the same picnic. He had about five specks of dot-like lesions, reddish black in colour, on both his feet. Two of the lesions were just about 5mm long. A pretreatment blood sample was taken and the same treatment regime of DEC at 50mg thrice a day was given for one week. When he returned after one week, the lesions had cleared up and there was no further itchiness. The pre-treatment IFA titre was 1:64, no post-treatment sample was taken.

Discussion

Since creeping eruption is not a fatal disease, statistics on its prevalence are not easily available. Not all cases are reported to physicians for treatment.[11] The cases presented here showed similar signs and symptoms as observed in earlier publications of Kirby Smith, Dave and White,[6] Shelmire[7] and Heydon.[8] The development of linear lesions was always preceded by itching sensations, usually worst at night. During the advance of a lesion the old portion heals and there is a gradual disappearance of the route taken by the larva. The bullous formation, which contains clear fluid, forms when the parasite is "resting" for a day or so.[7]

In this series the IFA titres in Case 1 were similar in the pre and post treatment samples. No serological findings have been reported on *A. caninum* and *A. braziliense* in humans so far. Probably like all other parasitic infections, anitbody level persists for a long period. No post-treatment samples were obtained from Case 2 and 3. The possibility of cross-reaction due to human hookworm infection was considered. However no study to this effect has been done. Stool examination for hookworm infection could not be done in these patients as no stools samples could be obtained from them.

Fumigation with ethyl acetate or freezing with ethylchloride to kill the larva was not done since the actual position of the larva could not be determined. The inflammatory canal only becomes visible after the larva has passed that route.[7] In one case there were three different larvae migrating making it difficult to identify their routes of advancement. Local infiltration with 1% formalin is a rather painful process and since the patient was already in pain, it was decided not to use this method of treatment. The situation as regards treatment is well described by Sompayrac[12] who has tried various recommended treatments and found that although drugs shorten the course of the disease, untreated cases do recover spontaneously. Some of these untreated cases could recover within 10-14 days, some may take 3-4 weeks and some even as long as 3-4 months.[7] In the present cases, Case 1, 2 and 3 were treated with diethyl carbamazine 50 mg thrice weekly for three, two and one weeks respectively, until the lesions cleared up completely.

These patients had gone for a picnic in an area where there were many stray dogs scavenging for food thrown by the picnickers. This supports the possibility that the larva migrans was due to a parasite of animal origin. Such infections are mostly seen in persons who have come into contact with damp sandy soil around swimming resorts, beaches and children's playgrounds infected with dog or cat faeces having high hookworm (*Ancyclostoma braziliense*) infection.[1 3]

Acknowledgements

The authors wish to thank Dr. Rajamanikam, a general practitioner, for referring these cases to us for further management, the Director, Institute for Medical Research, for permission to publish this paper and Mr Wong Wee Kong for the photographs.

References

1. Paul C Beaver. Parasitological reviews – Larva migrans. Parasitol. 1956; 5: 587-621.
2. Beaver P, Snyder H, Carrera G, Dent J and Lafferty J. Chronic eosinophilia due to viseral larva migrans. Report of three cases. Paediatrics 1952; 9 : 7–19.
3. Sandosham AA. An investigation into the association of creeping eruption with strongyloides infection contracted in Far East. J of Helm 1952; 26 : 1–24.
4. Chew BK, Khoo OT. Creeping Eruption Singapore Med. J. 1963; Vol. 4. No. 1.
5. Schacher JF, Danaraj TJ. Creeping eruption. A non-patient, zoonotic Helminthiasis in Singapore Proc. of Alumni Assn Malaya 1957; Vol. 10. No. 2. 1, 141.
6. Kirby-Smith J, Dov W, White G. Creeping of eruption. Arch Dermatol Syphilol 1926; 13 : 137–173.
7. Shelmire B. Experimental creeping eruption from a dog and cat hookworm (*A. braziliense*). J Am Med Assoc 1928; 91 : 938–944.
8. Heydon GM. Creeping eruption or larva migrans in North Queensland and a note on the worm Gn'thostoma spinigenum (Owen). Med J Aust 1929; 2 : 583–591.
9. Gomez DF. *Ancylostoma braziliense* N. sp., Parasites of Cats and Dogs. Mem do Inst. Oswaldo Cruz. 1910; 2 : 286.
10. Muhleisen J P. Demonstration of pulmonary migration of the causative organism of creeping eruption. Ann Intern Med 1953; 38 : 595–600.
11. Walter E Dove. Further studies on *Ancylostoma braziliense* and the etiology of creeping eruption. Am J Hyg 1932; 15 : 665.
12. Sompayrac L M. Creeping eruption. South Med J 1954; 57 ; 194–221.
13. Little MD, Neal Hasley A, Barnet Cline L Stephen Katz P. Ancylostoma larva in a muscle fibre of man following cutaneous larva migrans. Am J Trop Med Hyg 1983; 32 (6): 1285–1288.