

## CASE 13

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**Patient:** A 33-year-old Thai female from Bangkok

**Chief Complaint:** Migratory swelling and pruritus nodules for 2 months

**Present Illness:** The patient presented with a 2-months history of migratory reddish swelling nodules on both arms and legs. The lesions were highly itchy and sometimes slightly painful. The patient reported that the nodules appeared and disappeared spontaneously over 2-3 day periods, initially located on the left upper arm, and extending to the thighs. She had no systemic symptoms.

**Past History:** 18 years prior to Ramathibodi hospital visit, the patient had a history of gnathostomiasis and had been treated with unknown oral medication at Sakonnakorn hospital. She also had a history of ingestion of raw meat and freshwater fish. No history of drug allergy, insect bite and traveling.

**Family History:** nil

**Physical Examination:**

VS: T 37 °C, RR 20/min, BP 93/56 mmHg, HR 72/min

GA: good consciousness, not pale, no jaundice

Others: unremarkable

**Dermatological Examination** (Figure 13.1): Solitary hyperpigmented round patch at left elbow with tender subcutaneous nodule, size 2.5 cm.

**Investigations:**

CBC: Hb 12.8 g/dL, Hct 39.8%, Platelets 286,000/mm<sup>3</sup>

WBC 8820/mm<sup>3</sup> (N 50%, L 38%, M 6%, E 4%)

Absolute eosinophil count 352/mm<sup>3</sup>

ESR: 18 mm/hr (4-20)

Urinalysis: normal



Figure 13.1

**Histopathology (S10-4062)** (Figure 13.2-3): dense diffuse infiltrate of numerous eosinophils intermingled with some lymphocytes, around tunneling larva of parasite, in the dermis and subcutaneous tissue

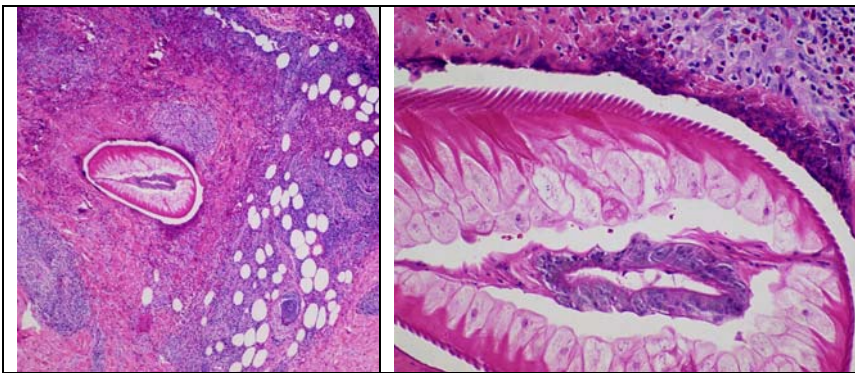


Figure 13.2, H&E 40x

Figure 13.3, H&E 200x

**Diagnosis:** Gnathostomiasis

**Treatment:** Albendazole (400) 1 tab oral bid pc x 21 days

**Presenter:** Vasinee Kerdvongbundit

**Consultant:** Somsak Tanrattanakorn

**Discussion:**

*Gnathostoma sp.* is nematode worm. First intermediate host is a crustacean. Second intermediate host includes fish, frogs, and snakes. *Gnathostoma* infects humans following ingestion of third-stage larvae in undercooked fish, such as "ceviche" – marinated raw fish – consumed in Mexico and Peru, fermented fish (which is a Thai delicacy), raw snakes, frogs, crustaceans, or amphibians <sup>1-2</sup>.

The infection is an endemic disease in Southeast Asia, namely in Thailand, Vietnam, Philippines, Malaysia, and Burma. Cases are increasingly being found as an imported disease in nonendemic countries <sup>2</sup>.

The signs and symptoms are caused by persistent aberrant migration of nematode larva of *gnathostoma* burrowing through the skin of its unnatural host, usually humans. The usual route of migration of the parasite is from the stomach to the liver and then to skeletal muscle and subcutaneous tissue. Migration of the larva through internal organs may cause gastric, intestinal, pulmonary, urinary, ocular, and cerebral symptoms <sup>3</sup>. Two main types of cutaneous lesions have been described. The most common is an intermittent migratory erythematous edema, which may be highly pruritic and painful. It usually lasts for a few hours to a few days, and then migrates to other areas. Episodes tend to become less intense and of shorter duration after time. Another less frequent presentation is that of a serpiginous pruritic cord (creeping eruption), from which the larvae can be recovered. Occasionally, microabscesses or nodular lesions can be seen <sup>4</sup>.

Definitive diagnosis is established by direct demonstration of larvae. However, the most commonly used diagnostic method is an indirect diagnosis by means of serology. Specific IgG antibodies can be discovered using ELISA

or Western blot. Recognition of 21 kDa antigen in *G. spinigerum* advanced third-stage larvae crude extracts is the most specific diagnostic marker for human gnathostomiasis, with 100% sensitivity and specificity <sup>5</sup>. About 70% of the patients in gnathostomiasis show marked eosinophilia often exceeding 50% of the total white blood count. However, it can also be normal <sup>6</sup>.

The anthelmintic albendazole in a dosage of 400 mg b.i.d. for 21 days has become drug of choice. A placebo-controlled therapy study with albendazole showed a cure rate of 94 % opposed to 0 % in the placebo group <sup>7</sup>. Studies have shown that a single dose of ivermectin (200 µg/kg) is also effective <sup>8</sup>. Recurrences may occur up to 24 months after apparent cure without reinfection <sup>9</sup>.

A significant preventive measure is the avoidance of eating fresh meat from second intermediate hosts, particularly raw fish from infected waterways. The larvae appear to be killed by freezing infected meat to -20° C for 3 to 5 days. Marinating infected meat in various substances generally is not effective. Vinegar appears to kill the organism in approximately 6 hours and soy sauce in 12 hours; lime juice is not effective after 5 days at room temperature or after 30 days at 4° C <sup>10</sup>.

In this case, the combination of history, clinical findings and histopathology pointed to the diagnosis of gnathostomiasis. Albendazole 400 mg b.i.d. was administered for three weeks. The lesion has been disappeared. In despite of good prognosis, the long term follow up is still needed.

## References

1. Graeff-Teixeira C, Ara'mburu da Silva AC, Yoshimura K. Update on Eosinophilic Meningoencephalitis and Its Clinical Relevance. *Clinical microbiology reviews* 2009;22:322-48.
2. Górgolas M, Santos-O'Connor F, Unzú AL, Fernández-Guerrero ML, Gárate T, Troyas Guarch RM, et al. Cutaneous and medullar gnathostomiasis in travelers to Mexico and Thailand. *J Travel Med* 2003; 10:358-61.
3. Hennies F, Jappe U, Kapaun A, Enk A. Gnathostomiasis: import from Laos. *J Dtsch Dermatol Ges* 2006;4:414-6.
4. Del Giudice P, Dellamonica P, Durant J, Rahelinrina V, Grobusch MP, Janitschke K, et al. A case of gnathostomiasis in a European traveller returning from Mexico. *Br J Dermatol* 2001;145:487-9.
5. Anantaphruti MT, Nuamtanong S, Dekumyoy P. Diagnostic values of IgG4 in human gnathostomiasis. *Trop Med Int Health* 2005;10:1013-21.
6. Slevogt H, Grobusch MP, Suttorp N. Gnathostomiasis without eosinophilia led to a 5-year delay in diagnosis. *J Travel Med* 2003;10:196.
7. Kravichian P, Kulkumthorn M, Yingyourd P, Akarabovorn P, Paireepai CC. Albendazole for the treatment of human gnathostomiasis. *Trans R Soc Trop Med Hyg* 1992;86:418-21.
8. Bussaratid V, Desakorn V, Krudsood S, Silachamroon U, Looareesuwan S. Efficacy of ivermectin treatment of cutaneous gnathostomiasis evaluated by placebo-controlled trial. *Southeast Asian J Trop Med Public Health* 2006;37:433-40.
9. Strady C, Dekumyoy P, Clement-Rigolet M, Danis M, Bricaire F, Caumes E. Long-term follow-up of imported gnathostomiasis shows frequent treatment failure. *Am J Trop Med Hyg* 2009;80:33-5.
10. Ligon BL. Gnathostomiasis: a review of a previously localized zoonosis now crossing numerous geographical boundaries. *Semin Pediatr Infect Dis* 2005;16:137-43.