

# 6

## A 36-Year-Old Male Traveller Returning from Botswana With a Creeping Eruption

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### Clinical Presentation

#### History

A 36-year-old male restaurant owner presents to a travel clinic in Europe with a mobile itchy mass under his skin. Three weeks ago, he noted the mass in his groin for 4 days after which it subsided. He then noted an itchy, serpiginous rash tracking from his groin to his chest, which moved over the course of several days and then disappeared; he then noted the mass reappearing on his right shoulder, at which point he was referred for assessment. There is no history of fever or systemic illness.

Five weeks ago, he returned from a fishing holiday with four friends to the Okavango Delta in Botswana. He took malaria chemoprophylaxis, slept on the boat under a mosquito net and swam in fresh river water. He ate freshwater fish from the river.

He is married and denies sexual contact on the trip. Of the four friends who accompanied him, two also have the same complaint.

#### Clinical Findings

The patient is afebrile and organ system examination is normal. On his right upper deltoid is a firm mass with clear margins  $3 \times 8$  cm in size. On further questioning this mass has recently migrated across his upper chest wall, and a serpiginous tract is visible (Fig. 6.1). There is no additional rash and no lymphadenopathy.

#### Laboratory Results

Total white cell count  $8.9 \times 10^9/L$  (reference range: 4–10), eosinophil count  $0.9 \times 10^9/L$  ( $<0.5$ ), liver function tests, creatinine and electrolytes are normal. HIV antibodies are negative.

### Questions

1. What is the likely diagnosis and what are your differentials?
2. What is the risk of this condition if untreated?

### Discussion

A 36-year-old European presents because of a mobile migratory mass he has been noticing for the past 3 weeks. Five weeks ago, he returned from a fishing trip to the Okavango Delta. Two of his travel companions have the same symptoms. Full blood count shows eosinophilia.

#### Answer to Question 1

##### *What Is the Likely Diagnosis and What Are Your Differentials?*

This patient is systemically well, with a mobile itchy mass. The eosinophilia suggests a parasitic cause. The fact that



• Fig. 6.1 Itchy serpiginous rash tracking up the right shoulder.

two of his travel companions are experiencing similar symptoms indicates a common exposure factor.

The presentation is classic for gnathostomiasis, even though his travel history appears uncommon. Gnathostomiasis is endemic in South-East Asia and Latin America, but only a few cases have been reported in Africa. It is a food-borne zoonotic nematode infection that classically presents with a mobile subcutaneous mass, intermittent creeping eruptions and eosinophilia. The infection is acquired by eating raw fish and other food items.

Intermittent migratory swellings are also typically seen in patients with *Loa loa* infection (calabar swelling), but *Loa loa* is not endemic in the Okavango Delta and the minimum incubation time is 5 months.

A very rare cause of migratory swellings and eosinophilia is sparganosis. It is caused by larvae ('spargana') of canine and feline tapeworms of the genus *Spirometra* and acquired by drinking water containing infected copepods or by eating raw or undercooked intermediate hosts such as amphibians or reptiles. It mainly occurs in East and South-East Asia, but cases have also been reported in East Africa.

Several other infections acquired in the tropics can be migratory and are associated with an itchy track-like rash. Such creeping eruptions are commonly caused by larvae of animal hookworms or *Strongyloides stercoralis* but these present with fine, serpiginous tracks and not with a large mobile mass, as seen in this patient. Very rare causes of creeping eruption are ectopic fascioliasis and migratory myiasis.

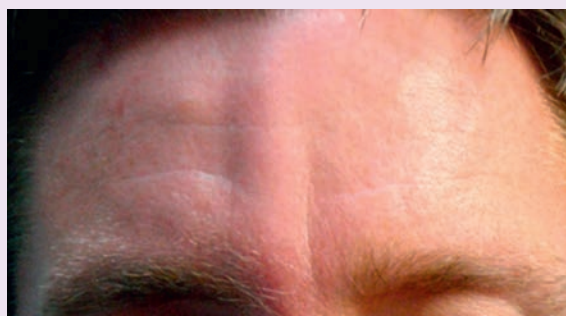
## Answer to Question 2

### What is the Risk of This Condition If Untreated?

Deaths from gnathostomiasis have occurred when the parasite has entered the brain or spinal cord, causing severe neurological sequelae.

## The Case Continued. . .

The patient admitted that on their trip they had made sushi from fresh fish caught in the river. A clinical diagnosis of cutaneous gnathostomiasis was made and the patient was started on albendazole 400 mg bid for 21 days and ivermectin 200 µg/kg stat. Serology for *Gnathostoma* was negative. Over the next 6 days, the serpiginous lesion migrated over his shoulder and neck, disappeared for 24 hours, then reappeared between his eyebrows, moved to his forehead and face (Fig. 6.2), and then was felt inside his nose. On the sixth day



• **Fig. 6.2** A picture taken after treatment of the mass tracking down the patient's forehead.

of treatment he expressed a larva from his nostril, which was identified as *Gnathostoma spinigerum*. His two friends were also seen at the same institution and were given similar treatment with full resolution of their symptoms.

## SUMMARY BOX

### Gnathostomiasis

Gnathostomiasis is mostly caused by *Gnathostoma spinigerum*, a zoonotic nematode. Humans are accidental hosts. Gnathostomiasis is endemic throughout areas where large amounts of raw or undercooked freshwater fish and crustaceans are consumed, most importantly in East and South-East Asia and Central and South America. Case reports are emerging from Southern Africa.

Adult worms infect the gastrointestinal tract of feline and canine species. When eggs excreted through the faeces get into water, first-stage larvae hatch, which then infect small freshwater crustaceans. A large variety of animals can act as a second intermediate host. Humans become infected by eating raw or undercooked meat of intermediate hosts, such as freshwater fish, crabs, shrimps, frogs, snakes, fowl and pork. Gnathostomiasis commonly occurs in outbreaks.

Larvae penetrate the human intestinal wall and wander around the body. Initial symptoms are non-specific and may include fever, malaise, vomiting and diarrhoea lasting for 2 to 3 weeks. This is accompanied by marked eosinophilia. Within 1 month cutaneous infection may develop, manifesting as non-pitting oedematous migratory swellings that may be pruritic or painful and mainly affect the trunk and the proximal limbs. Visceral disease occurs when the larvae migrate through the internal organs such as the lungs, gut, genitourinary tract, eye and CNS. CNS invasion may manifest as eosinophilic meningoencephalitis, subarachnoid haemorrhages, cranial neuritis or painful radiculomyelitis as a result of invasion of the spinal cord. Diagnosis is suggested by eosinophilia, migratory swellings and a history of geographical and food exposure. Gnathostomiasis is confirmed when demonstration of the parasite is made microscopically, radiologically or on positive serological examination up to 3 months after presentation. Lumbar puncture and cranial imaging may be necessary in suspected CNS disease. CSF is often xanthochromic and may show eosinophilia. Imaging may reveal larval tracks within the brain and cord parenchyma. Treatment consists of albendazole 400 mg bid for 21 days and/or ivermectin 200 µg/kg on two consecutive days. For CNS infection, adjunctive corticosteroids are considered beneficial.

## Further Reading

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3. Checkley AM, Chiodini PL, Dockrell DHM, et al. Eosinophilia in returning travellers and migrants from the tropics: UK recommendations for investigation and initial management. J Infect 2010;60(1):1–20.
4. Neumayr A (ed). Antiparasitic treatment recommendations. 2nd Ed. Tredition: Hamburg. 2018 (cf: <https://tredition.de/autoren/andreas-neumayr-16821/antiparasitic-treatment-recommendations-paperback-104637/>).