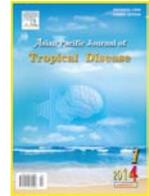




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Case of a subcutaneous nodule

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PEER REVIEW

ABSTRACT

Peer reviewer

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Comments

Subcutaneous dirofilariasis can mimic various benign and malignant lesions. This is an interesting case of human dirofilariasis presenting as a scalp nodule in a young female. Details on Page S337

Human dirofilariasis is an emerging zoonotic disease caused mainly by *Dirofilaria repens* and *Dirofilaria immitis*. Human dirofilariasis presents commonly as subcutaneous nodules, pulmonary nodules or nodules in the eye. We present a case of human dirofilariasis from India, presenting as a subcutaneous nodule on the scalp. Physical examination showed a well defined, tender and oval shaped nodule about 2 cm×2 cm on the left temporal region. The nodule was excised. Pathological examination revealed a nematode embedded in eosinophil rich granulomatous inflammatory infiltrate. Under the microscope, the nematode was identified as *Dirofilaria repens* based on morphology.

KEYWORDS

Dirofilariasis, Subcutaneous nodule, *Dirofilaria repens*

1. Introduction

Human dirofilariasis is rare. Dirofilariasis is caused by zoonotic filarial nematodes. Dirofilariasis is a common parasite of cats and dogs. It is transmitted to humans by mosquito bite. It usually presents as nodular lesions in the lung, subcutaneous tissues or eyes. Cases of human dirofilariasis is mainly caused by two species, *Dirofilaria immitis* (*D. immitis*) and *Dirofilaria repens* (*D. repens*). We presented a case of human dirofilariasis from India.

2. Case report

A 22 year old female presented to our institution with a subcutaneous nodule on her scalp. She developed the nodule 4 months prior to the hospital visit. The nodule enlarged gradually. Physical examination showed a well defined, tender and oval shaped nodule about 2 cm×2 cm on the left temporal region (Figure 1A) .

Lab investigations showed Hb 14.1 g/dL, total white blood cell count 10500 cells/mm³, differential count N60, L26, E6, M8, ESR 16 mm/1st h. Chest X-ray was normal. The nodule was excised. Pathological examination revealed a nematode embedded in eosinophil rich granulomatous inflammatory infiltrate (Figure 1B). Under the microscope, the nematode had a thick laminated cuticle which had prominent longitudinal ridges and transverse striations. The worm was identified as *D. repens* based on morphology.

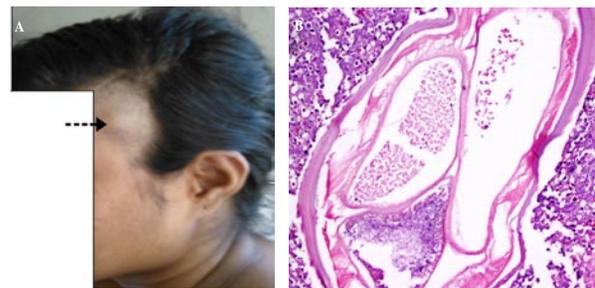


Figure 1. Subcutaneous nodule on the scalp and the tightly convoluted worm with thick laminated cuticle and distinct external ridges.

A: Subcutaneous nodule on the scalp; B: tightly convoluted worm with thick laminated cuticle and distinct external ridges (H & E, ×400).

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3. Discussion

Cases of human dirofilariasis have been reported from Australia, America, Europe and Asia. In India, cases of human dirofilariasis have been reported from Assam, Kerala and Tamil Nadu^[1–3]. The definitive hosts of *D. repens* and *D. immitis* are dogs, but other animals have also been reported as definitive hosts of *Dirofilaria* sp. (cats, bears and foxes). The vectors for *D. repens* are mosquitoes *Culex* and *Anopheles*^[4]. The adult dirofilarial worms release microfilaria into the host's blood, which are taken up by mosquitoes that serve as intermediate hosts and transmit the disease^[5]. Accidental human infection results in subcutaneous mass anywhere in the body. Adult worms do not reach maturity in humans and do not produce microfilaria. In response to infection, an inflammatory granulomatous reaction is seen.

Human dirofilariasis may present as subcutaneous nodules, pulmonary nodules or nodules in the eye. Our patient presented with a subcutaneous nodule on her scalp. Khurana *et al.* have reported three cases of human subcutaneous dirofilariasis from India^[6]. Subcutaneous dirofilariasis is mostly caused by *D. repens* in Asia^[7]. *D. immitis* causes pulmonary dirofilariasis. *Dirofilaria tenuis* (*D. tenuis*) and *Dirofilaria ursi* can also cause human dirofilariasis.

The diagnosis is confirmed by studying the morphology after their removal. Worms belonging to the genus *Dirofilaria* are identified by their thick laminated cuticle, broad lateral ends and large muscle cells. *D. immitis* can be differentiated from *D. repens* by absence of ridges^[3]. An accurate diagnosis can also be made by polymerase chain reaction for DNA-based analysis^[8].

Complete surgical excision of the lesion is the treatment of choice for patients with human dirofilariasis^[9]. Chemotherapy is not necessary as microfilaraemia is extremely rare^[7]. Dirofilariasis is an emerging zoonotic disease. Increased awareness of this infection will help in early detection of this disease.

This case report highlights the fact that dirofilariasis should be considered as a differential diagnosis in patients presenting with subcutaneous nodules.

Conflict of interest statement

We declare that we have no conflict of interest.

Comments

Background

Human dirofilariasis is a zoonotic disease caused by three species of *Dirofilaria*, i.e. *D. immitis*, *D. repens* and *D. tenuis*. It is transmitted to humans by mosquitoes. Surgical

removal of the worm is the treatment of choice.

Related reports

Cases of ocular dirofilariasis are mainly being reported from India. Human dirofilariasis presenting as a scalp nodule is a rare entity. Pampiglione *et al.* have reported the largest series of 60 cases of human dirofilariasis from Italy in 2001. Joseph *et al.* from India have reported 21 cases of subcutaneous dirofilariasis. We (Bhat KG *et al.*) have reported a case of *D. tenuis* presenting as a nodule around the eyelid in 2003. Lee *et al.* (2010) have published an article on public health issues of dirofilariasis.

Peer review

Cases of human dirofilariasis are increasing in India. Such case reports from non endemic areas support the fact that dirofilariasis is an emerging zoonosis. Subcutaneous dirofilariasis can mimic various benign and malignant lesions. This is an interesting case of human dirofilariasis presenting as a scalp nodule in a young female. Such a case report will sensitize the clinicians about the fact that dirofilariasis must be considered in the differential diagnosis of subcutaneous nodules. Polymerase chain reaction could have been used in the identification of *Dirofilaria* species. However, this test is available in reference laboratories.

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