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Case Report

HUMAN DIROFILARIASIS: AN UNCOMMON CASE OF SUB CUTANEOUS INFECTION WITH DIROFILARIA REPENS WITH A BRIEF REVIEW OF LITERATURE

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Abstract:
Dirofilaria are a group of arthropod borne filarial nematodes that cause infection in wide range of domestic and wild animals. Dirofilaria repens is a common zoonotic infection in countries like Sri Lanka. Human infection with Dirofilaria repens is not widely recognized in India. Most of the documented cases of human dirofilariasis recorded in India presented with ocular infections, affecting the eyelid, periorbital region and occasionally the sub conjunctivae. Here we report a rare case of sub cutaneous dirofilariasis, which presented as a swelling at an uncommon site.

Keywords : Dirofilariasis, Dirofilaria repens, Dirofilaria tenuis

Introduction

Dirofilaria are a group of mosquito borne filarial nematodes that cause infection in wide range of domestic and wild animals. The widely recognized parasites among them are Dirofilaria immitis (D.immitis), the agent of cardiovascular Dirofilariasis, and Dirofilaria repens causing sub cutaneous infection. D. repens is a mosquito borne filarial parasite of the sub cutaneous tissue of domestic and carnivores such as dogs, cats and foxes. Dirofilaria species may be divided into two groups: subgenus Dirofilaria represented by Dirofilaria immitis, which is characterized by smooth cuticle and normally found in the right heart and pulmonary vessels of dogs, the natural host ; and subgenus Nochtiella, which parasitize the sub cutaneous tissue. Species of this group have longitudinal ridges on the cuticle. Representative species are Dirofilaria (Nochtiella) repens, found in dogs and cats, and Dirofilaria tenuis, found in raccoons[1] .The mature D. repens live in the tissues and organs of vertebrates, while the immature stages or the microfilaria prefer the blood and the lymph vessels[2].

D. repens is a common zoonotic infection in countries like Sri Lanka. Human infection with D. repens is not widely recognized in India. However, there is probably a focus of human infection with D. repens in Kerala, from where few cases are being reported[3].

Case report

An 18 year old female patient, hailing from Allepey district of Kerala, presented with swelling on the right side of the neck of six months duration. The swelling increased in size in the past one week and was associated with fever and pain.

On examination a 4cm x 3cm swelling was noted in the right supraclavicular region (Figure1). The surface of the swelling was smooth and the borders ill defined. It was not fixed to the underlying muscle or deeper tissue. The swelling was tender on palpation and redness was noted over the swelling. No similar swelling was noted elsewhere. Clinical diagnosis of cervical lymphadenopathy was made. Needle aspiration cytology was advised. On FNAC a thin thread like white worm was

removed in toto.

The worm was thin, thread like, cylindrical measuring 9cms long and 497um wide with rounded anterior end and tapering posterior end. On glycerin wet mount the worm revealed thick cuticle with longitudinal ridges. Muscles were separated into dorsal and ventral bands. The thick cuticle had prominent longitudinal ridges with fine transverse striations (Figure 2). The body cavity showed elongated esophagus and uterus with small round structures within the uterus, which were the immature eggs. The worm was unfertilized or immature. The posterior end was tapering and unremarkable. Based on size, cuticular and internal morphology, the worm was identified as D. repens. The identity of the worm was confirmed as immature female D. repens at the Veterinary Sciences College, Hebbal, Bangalore.

Routine hematological and biochemical test results were normal and no microfilaria was seen in peripheral smear

Discussion

Dirofilariasis is often reported from European countries surrounding the Mediterranean particularly from Italy. The first D.repens case is said to have been reported by Angelo Pace in Palermo in 1867[1]. In India, sub cutaneous dirofilariasis is rare, only few cases having been reported from Kerala[4]and most of the documented cases of human dirofilariasis recorded in India presented with ocular infections, affecting the eyelid, periorbital region and occasionally the sub conjunctivae.[3].

Dirofilaria repens infection, rarely seen in humans, is a zoonotic illness. Humans get infected through blood sucking arthropods such as mosquitoes, fleas and ticks. For D. repens, the human body is not an appropriate host, and therefore, no mature stages of the parasite are found in man[2]. With changing host, agent and environmental factors, an increasing number of human infections are being reported. Though man is not a suitable host, there are reports of the infective larvae developing into adult worm and in exceptional cases even producing blood circulating microfilaria[5].

Identification of D.repens is made by studying the morphology of the worm. An adult male worm is 5-7cm long and 370-450µm wide with 2-6 pre anal papillae on the right side and 4-5 on the left. The spicules are unequal. The left spicule is 460-590µm and right ones are 180-210µm. The female are 10-17cm long and 460-650µm wide with a vulva 1.15-1.62 cm from the anterior end. The microfilaria is unsheathed and occurs in the sub cutaneous lymph spaces and in the blood of natural host[2].

The other species of Dirofilaria reported from India are D.immitis and D.tenuis[6, 7]. However, D.immitis can be differentiated from D.repens by the absence of longitudinal ridges and transverse striations[3]. Many parasitologists believe that D. tenuis is restricted to USA and consider that D. tenuis is synonymous with D.repens[5]. In the natural hosts, like dogs, studies have reported parasitemia varying from 12-37%[4].

Simple extraction of the worm or surgical excision of the lesion is the treatment of choice for human dirofilariasis. There is seldom a need for chemotherapy as Microfilaraemia is extremely rare. In a small number of cases, ivermectin and/or diethylcarbamazine has been tried with good results. The symbiosis of filarial nematodes and intracellular bacteria, Wolbachia, has been recently exploited as a target for antibiotic therapy of filariasis. Antibiotic treatment of filarial nematode results in sterility and inhibits larval development. In the first trial on human onchocerciasis, depletion of bacteria following treatment with doxycycline resulted in a complete and long term block of embryogenesis[8].

Conclusion

Human cases of dirofilariasis are most probably under reported because many of them remain undiagnosed or unpublished. The current case was diagnosed as subcutaneous Dirofilariasis based on parasitological observation. Definitive diagnosis can be made by molecular techniques like multilocus analysis of gene enzyme system and PCR. However these tests are not available for routine diagnostic purpose. Diagnostic constraints and lack of awareness often result in under reporting of cases. Awareness and high degree of suspicion is the key to diagnosing human Dirofilariasis.

Figure 1- Clinical presentation of swelling

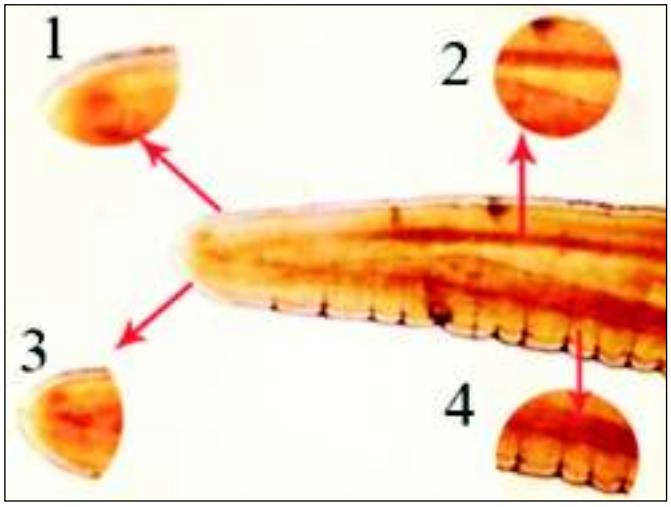

Figure 2- Immature female worm of Dirofilaria repens in wet mount showing (1) Thick cuticle (2) Intestine (3) Posterior end (4) Thick muscular coat with longitudinal ridges and transverse striations.

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