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Intramuscular Gravid Dirofilaria repens Infection in Human - An Unusual Presentation

Dr. A. Mohankumar[1], Dr. Sreejith PS [2], Dr. Rajesh T Patil[1], Dr. Venugopal PR [2]

[1]Department of Microbiology, PK Das Institute of Medical Sciences, Kerala, India

[2] Department of Surgery, PK Das Institute of Medical Sciences, Kerala, India

***Corresponding Author:** *Dr. A. Mohankumar, Department of Microbiology, PK Das Institute of Medical Sciences, Kerala, India*

Abstract: *Zoonotic filariasis caused by Dirofilaria repens(D. repens) is prevalent in several regions of the world including Europe, Africa, and Asia. It is considered an emerging zoonosis, due to the recent rise of human D. repens infections. In India, most of the documented cases of human dirofilariasis were from ocular infections, few from subcutaneous infections, but it was never reported from muscular plane. To the best of our knowledge, globally this is the first case of human D. repens infection caused by gravid worm in the muscle tissue.*

Keywords: *Human Dirofilariasis, gravid worm, muscle tissue.*

1. Introduction

Filarial worms of animals causing human infection are prevalent worldwide. Dirofilariasis is one of the emerging zoonotic filarial infection.[1] Dog being the principal reservoir host, mosquitoes are the intermediate host. Humans are generally considered to be dead-end host.[2]Reports in India shows *D. repens* is the predominant infecting species while few cases of *Dirofilaria immitis (D. immitis)*were also reported. *D. immitis* infection usually present as pulmonary nodules whereas *D. repens* form ocular infection or subcutaneous nodules in humans.[3]Human infections usually occur due to a single infertile dirofilarial worm isolated from subcutaneous tissue. Here we report the first case of infection with gravid *D. repens* worm isolated from the muscle plane.

2. Case History

A 66 year old gentleman from Palakkad district, Kerala presented with a painful swelling on left arm for two weeks. On examination the swelling was firm and not easily movable. His complete haemogram showed raised eosinophil count (28%) and ESR - 22mm/1st hour, other parameters were within normal limits. On ultra-sonogram a lesion in superficial muscular plane of flexor aspect of mid arm region showing linear tubular structure was seen. He had a dog at home and his residence was in a rural area heavily infested with mosquitoes. The lesion was excised from the muscular plane and a live worm was noted inside. The worm was thin, cylindrical and greyish white in colour measuring 10.5cm in length(Fig 1).

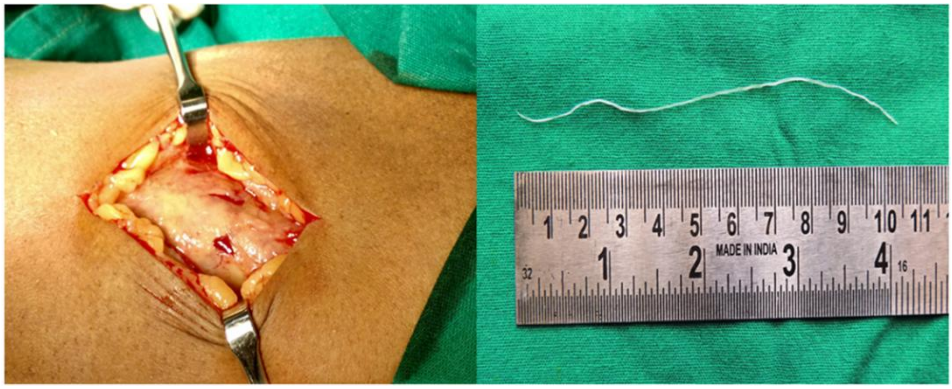

Fig 1. *Gross observation showing muscle plane and Dirofilaria worm*

On microscopic examination, presence of thick cuticle along with prominent longitudinal ridges and fine transverse striations on the external layer were noted. Presence of uterus containing ova and microfilariae inside the worm suggested that it was a sexually matured gravid female worm. Based on these features it was identified to be an adult gravid female *D. repens* (Fig 2).

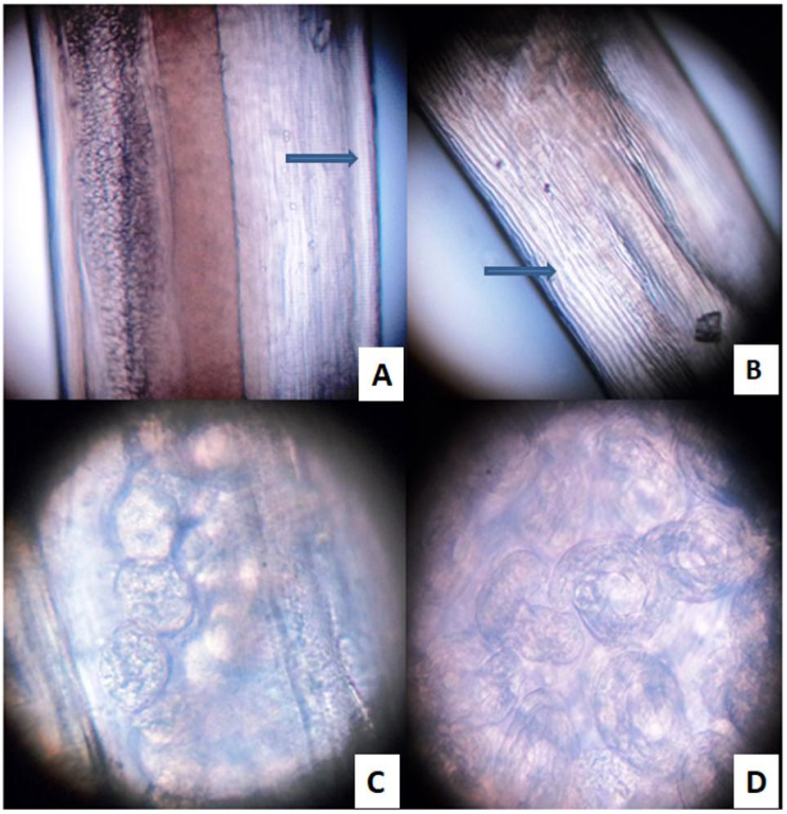

Fig 2. *Microscopic observation showing* ***A.*** *Thick cuticle,* ***B.*** *Longitudinal ridges,* ***C.*** *Egg,* ***D.*** *Larvae*

3. DISCUSSION

The human infections caused by filarial nematode of genus Dirofilariae are recently being commonly reported from various regions all over the world with endemic foci in southern and Eastern Europe, Asia and Sri Lanka.[4]The Subcutaneous dirofilariasis caused by *D. repens*are the commonest dirofilarial infection seen in Asia. In India the first human ocular and subcutaneous infection were reported from Kerala in 1976 and 2004 respectively.[5]Due to the climatic condition and suitable vectors, Kerala is considered to be an endemic region.[1]

The principal reservoir host of dirofilarial infections being dog, humans are infected incidentally and act as dead-end hosts where the worm usually perish before attaining maturity. In contradiction to the common belief our case report shows that full development and fertilization of dirofilaria worm in human host is possible.[6]Only very few cases of isolating a gravid female worm with microfilaria from humans have been reported worldwide. Thus in our case the finding of a gravid worm with microfilariae in human infection is interesting and remarkable.

Dirofilaria repens causes transitory inflammatory swellings which have a predilection for upper body sites (76%) over the lower body (24%). Of these, orbital lesions account for 31% cases.[7]In India, most reported cases of dirofilariasis in humans are in the form of ocular dirofilariasis with a few reports on subcutaneous dirofilariasis. [8]To the best of our knowledge no cases have ever been reported forthe isolation of *D. repens* worm from the muscle plane.

Dirofilaria repens can be identified based on the morphological features like thick cuticle, prominent longitudinal ridges and fine transverse striations. These features are absent in *D.immitis*.[9]In the neighboring Trissur district of Kerala, microfilariae of *D. repens* have been reported in 7% of domestic dogs. Hence an enhanced rate of infection can be anticipated among stray dogs.[1]

Excision of the lesion or removal of the worm is both diagnostic and therapeutic. As microfilaremia is very rare in humans no chemotherapy is usually needed.[6]

4. CONCLUSION

Human infections caused by *D.repens* are increasingly reported worldwide. All parasitic worms removed from humans should be identified, studied and documented to know the epidemiology and prevalence of these worms. In endemic areas, dirofilariasis should be kept as differential diagnosis for a single migratory or non-migratory subcutaneous swelling.

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