**ABSTRACT**

Human dirofilariasis is a zoonotic disease which is caused by the filarial nematodes, *Dirofilaria repens* and *Dirofilaria immitis*. *Dirofilariae* are transmitted to humans via mosquito bites. Human *Dirofilaria* presents commonly as subcutaneous nodules, pulmonary nodules or nodules in the eyes. They are considered as emerging pathogens. We are presenting a case of human *Dirofilaria* from Karnataka, which was caused by *Dirofilaria repens*.

**INTRODUCTION**

*Dirofilaria* is caused by filarial nematodes. It is a zoonotic infection which is caused by *D. immitis*, *D. repens*, *D. tenuis* and *D. ursi*. It is transmitted to humans by the Culex, Aedes or the Anopheles mosquitoes, which ingest the blood-containing microfilaria from affected dogs. Human *Dirofilaria* is rare. It usually presents with nodular lesions in the lung, the subcutaneous tissues or the eyes. The reported cases of the *Dirofilaria* infection in humans are mainly caused by 2 species, *Dirofilaria immitis* (*D. immitis*) and *Dirofilaria repens*. We are presenting a case of human *Dirofilaria* from Karnataka, which was caused by *Dirofilaria repens*.

**CASE REPORT**

A 48 year old female presented to our institution with a subcutaneous nodule above her left eye of 4 month’s duration. The nodule enlarged gradually. Her physical examination showed a well-defined, nontender and oval shaped nodule which was about 2 x 2 centimetre in size.

Her lab investigations showed Hb - 12.9g/dl, Total White Blood Cell count - 5900 cells/cu.mm, Differential count– N-65, L-28, E-6, M-1 and ESR- 13mm/1st hour. Her chest X-ray was normal.

An excision biopsy of the nodule was performed. The gross examination revealed 2 irregular pale brown tissues that measured 0.6 cm and 1.8 cm in diameter. There was no evidence of calcification within the nodule. The pathological examination revealed a nematode which was embedded in the eosinophil rich granular material [Table/Fig-1 and 2]. Under the microscope, the nematode was found to have a thick laminated cuticle which had prominent longitudinal ridges and transverse striations. The worm was identified as *Dirofilaria repens*, based on its morphology.

**DISCUSSION**

Though human *Dirofilaria* is rare, the number of cases of *Dirofilaria* which are caused by *Dirofilaria repens* has been increasing worldwide over the last decade. In India, cases of human *Dirofilaria* are being reported from Karnataka [1], Kerala [2], Tamil Nadu [3] and Assam [4]. The definitive hosts of *Dirofilaria repens* and *Dirofilaria immitis* are dogs, but other animals have also
been reported as the reservoirs of this disease (cats and bears) [5]. The adult female worms of D. repens release microfilariae into the circulation of the infected animals, which are ingested by the vectors during a blood meal [6]. An accidental human infection results in a subcutaneous mass anywhere in the body, preferentially around the eye. In response to the infection, an inflammatory granulomatous reaction develops. The adult worms do not reach maturity in humans and they do not produce microfilaria.

Human Dirofilariasis can be classified as pulmonary and extra-pulmonary Dirofilariasis. Extra-pulmonary Dirofilariasis is classified further into: subcutaneous, visceral, and ophthalmic Dirofilariasis [7]. D. repens usually resides subcutaneously, while D. immitis frequently ends up in the lung. Khurana et al have reported three cases of human subcutaneous Dirofilariasis from India [8].

The diagnosis is confirmed by studying their morphologies after their removal. The worms which belong 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 the absence of ridges [3]. An accurate diagnosis can also be made by a PCR-based DNA analysis [9]. A PCR based DNA analysis was not done in our case.

A complete surgical excision of the lesion is the treatment of choice for the patients with human Dirofilariasis. Chemotherapy is not necessary as microfilaraemia is extremely rare [10]. Dirofilariasis is considered an emerging zoonotic disease [11]. An increased awareness on this emerging zoonotic infection in India among doctors will help in the early detection of this disease.

CONCLUSION
This case report suggests that Dirofilariasis should be considered as a differential diagnosis in the patients who present with subcutaneous nodular lesions.

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REFERENCES

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