

An Interesting Case of a Subcutaneous Nodule

BASAVAPRABHU ACHAPPA, DEEPAK MADI, SOUNDARYA MAHALINGAM

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*.

Key Words: *Dirofilaria*, *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

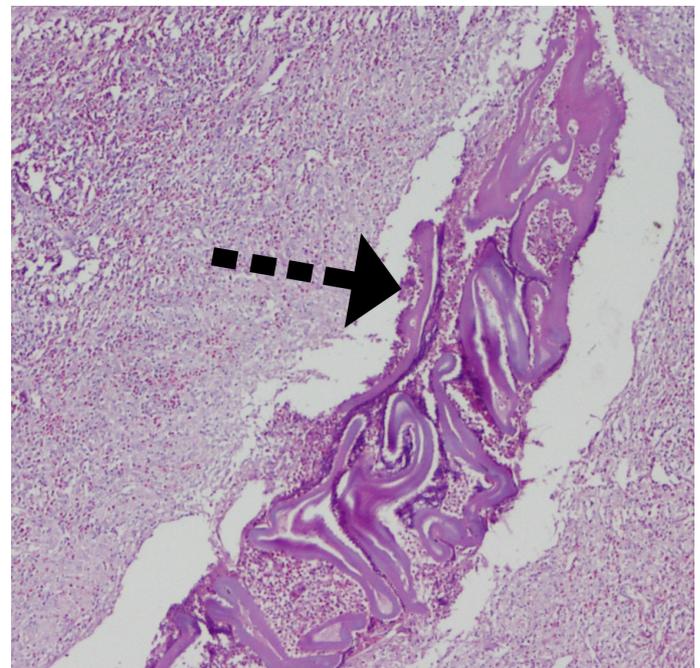
A 48 year old female presented to our institution with a subcutaneous nodule above her left eye of 4 month's duration. The nodule enlarged gradually. Her physical examination showed a well-defined, nontender and oval shaped nodule which was about 2 x2 centimetre in size.

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.

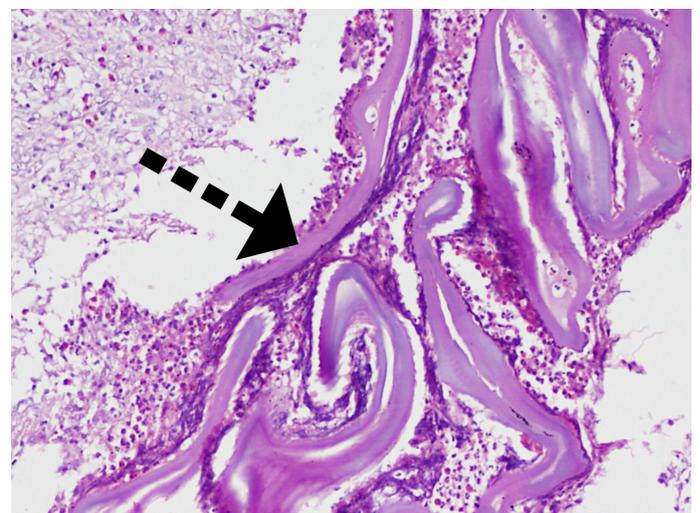
An excision biopsy of the nodule was performed. The gross examination revealed 2 irregular pale brown tissues that measured 0.6 cm and 1.8 cm in diameter. There was no evidence of calcification within the nodule. The pathological examination revealed a nematode which was embedded in the eosinophil rich 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



[Table/Fig-1]: Filarial worm embedded in eosinophilic granular material



[Table/Fig-2]: Filarial worm with thick cuticle, transverse ridges and longitudinal striae

been reported as the reservoirs of this disease (cats and bears) .

The vectors for this parasite are mosquitoes (*Culex* and *Anopheles*) [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.

ACKNOWLEDGMENTS

The authors thank Dr. Radha Pai, Department of Pathology, for her help.

REFERENCES

- [1] Nadgir S, Tallur SS, Mangoli V, Halesh LH, Krishna BV. Subconjunctival dirofilariasis in India. *Southeast Asian J Trop Med Public Health*. 2001; 32:244-46.
- [2] Ittyerah TP, Mallik D. A case of subcutaneous dirofilariasis of the eyelid in the South Indian state of Kerala. *Indian J Ophthalmol*. 2004; 52:235.
- [3] Sathyan P, Manikandan P, Bhaskar M, Padma S, Singh G, Appalaraju B. Subtenons infection by *Dirofilaria repens*. *Indian J Med Microbiol*. 2006;24:61-62.
- [4] Nath R, Gogoi R, Bordoloi N, Gogoi T. Ocular dirofilariasis. *Indian J Pathol Microbiol*. 2010;53:157-59.
- [5] Athari A. Zoonotic subcutaneous dirofilariases in Iran. *Archives of Iranian Medicine*. 2003;6:63-65.
- [6] Joseph K, Vinayakumar AR, Criton S, Vishnu MS, Pariyaram SE. Periorbital mass with cellulitis caused by dirofilaria. *Indian J Med Microbiol*. 2011;29:431-33.
- [7] Akao N. Human dirofilariasis in Japan. *Trop Med Health*. 2011;39: 65-71.
- [8] Khurana S, Singh G, Bhatti HS, Malla N. Human subcutaneous dirofilariasis in India: A report of three cases with brief review of literature. *Indian J Med Microbiol*. 2010;28:394-96.
- [9] Cancrini G, Prieto G, Favia G, Giannetto S, Tringali R, Pietrobelli M, et al. Serological assays on eight cases of human dirofilariasis identified by morphology and DNA diagnostics. *Ann Trop Med Parasitol*. 1999;93:147-52.
- [10] Padmaja P, Kanagalakshmi, Samuel R, Kuruvilla PJ, Mathai E. Subcutaneous dirofilariasis in southern India: A case report. *Ann Trop Med Parasitol*. 2005;99:437-40.
- [11] Azari-Hamidian S, Yaghoobi-Ershadi MR, Javadian E, Mobedi I, Abai MR. Review of dirofilariasis in Iran. *J Med Facul Guilian Univ Med Sci* 2006;15:102-13.

AUTHOR(S):

1. Basavaprabhu Achappa
2. Deepak Madi
3. Soundarya Mahalingam

PARTICULARS OF CONTRIBUTORS:

1. Associate Professor, Department of General Medicine, Kasturba Medical College, Mangalore (affiliated to Manipal University), India.
2. Assistant Professor, Department of General Medicine, Kasturba Medical College, Mangalore (affiliated to Manipal University), India.
3. Associate Professor, Department of Paediatrics, Kasturba Medical College, Mangalore (affiliated to Manipal University), India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Deepak Madi,
Assistant Professor,
Department of General Medicine,
Kasturba Medical College,(affiliated to Manipal University)
Attavar, Mangalore-575001, India.
Phone: 9845609148
E-mail: deepakmadi1234@gmail.com

FINANCIAL OR OTHER COMPETING INTERESTS:

None.

Date of Submission: **Jun 21, 2012**
Date of Peer Review: **Jul 13, 2012**
Date of Acceptance: **Nov 26, 2012**
Date of Publishing: **Feb 01, 2013**