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Case Study

A case of Dirofilariasis presenting as breast nodule

Sapna M^{*}, Magdalene K F, Vasanthi M S

Sree Narayana Institute of Medical Sciences. Chalaka, Ernakulam Kerala.683594.India.

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Dirofilariasis is a zoonotic disease caused by infection of one of several species of worms belonging to genus *dirofilaria*. Human dirofilariasis in eye, subcutis are often documented, but it is very rarely seen in breast. In India, this zoonosis is often documented in southern India, especially Kerala. Here we report a case of dirofilariasis in breast, presenting as a breast nodule

Key words: Breast, *Dirofilaria*, India

1. INTRODUCTION

Dirofilariasis is a zoonotic infection which is prevalent in several regions of the world. ¹ *Dirofilaria* are long thin parasitic round worms that infect a variety of mammals. Infections are mainly transmitted by mosquito bites. There are many species of *Dirofilaria*, but human infection is caused most commonly by three species, *D. immitis*, *D. repens*, and *D. tenuis*. Human dirofilariasis in eye, subcutis are often reported, but it is very rarely seen in breast. ² In India, this zoonosis is often documented in southern India, especially Kerala. ³ Here we report, a case of dirofilariasis in breast, presenting as a breast nodule.

2. CASE REPORT

A 38 year old woman visited the surgical outpatient department with a complaint of lump in the breast. She

Corresponding author *

Dr.Sapna M., Sree Narayana Institute of Medical Sciences. Chalaka, Ernakulam Kerala.683594.India

had noticed the swelling since one week. She did not have any previous history of breast problems and there was no history of carcinoma in her family.

On examination, it was a non tender freely movable subcutaneous nodule measuring 2x1 cm in diameter, which was seen in outer upper quadrant of her left breast. There was no discharge from the nipple. A clinical diagnosis of fibroadenoma was made.

The complete hemogram revealed eosinophilia with an absolute eosinophil count of $0.9 \times 10^9/l$.

Attempted needle aspiration of the lump yielded no fluid and cytology smears showed occasional ductal epithelial cells and a few inflammatory cells. The patient refused for mammography. Under general anesthesia, a local excision of the lump was made and the tissue was subjected for histopathological examination.



Fig 1: Gross specimen of breast lump showing fibrofatty tissue with an indurated cystic area containing grey white material (arrow)

Gross pathological examination showed a fibrofatty tissue measuring 2x1.5x1cm. Cut surface showed an indurated area with a tiny cyst consisting of grey white material. (figure1). Microscopic examination showed fibroadipose tissue with a marked inflammatory infiltrate composed of predominance of eosinophils. Transverse section of a helminth was noticed amidst the inflammatory cells. The cuticle was thick and multilayered with transverse striations and a wavy external ridge appearing as bosses at intervals. The muscle layer below the cuticle was well developed and the body cavity contained an alimentary canal and

uterus filled with immature cells. The worm was morphologically identified as *Dilofilaria repens*.(figure 2,3)

3. DISCUSSION

The genus *Dirofilaria* was identified in 1911 and contains over 20 species.⁴ In humans, it is usually caused by *D repens*, *D immitis*, *D tenuis*, *D urisis*. This zoonosis spreads by mosquitoes (*culex*, *aedes*, *anopheles*).⁵

The dog is the definitive host and mosquito serves as a vector and intermediate host. The larvae that enter the body through a mosquito bite often do not survive the passage through tissue under the skin and when they do survive, the adult worms remain sexually immature. Therefore, *Dirofilaria* infection in humans does not result in the production of microfilariae and humans are not able to transmit the infection to other hosts. This is unlike the infection in other mammalian hosts, such as dogs. In these hosts, the infection can be transmitted to other hosts because microfilariae are produced and then ingested by mosquitoes in blood meals.⁴



Fig 2: Histopathology section showing breast fat with dense chronic inflammatory infiltrate and dilofilaria repens. (H and E, x100)

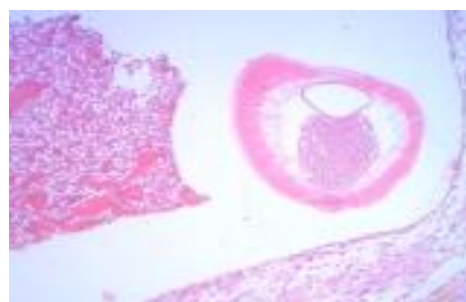


Fig 3: cross section of *Dilofilaria repens* adult worm consisting of thick multilayered cuticle, transverse striations, longitudinal wavy ridges and gravid uterus (H and E, x100)

The infection is mostly symptomless, but after some days itching, hyperaemia, erythema, edema may appear.¹The dead worms evoke a chronic inflammatory reaction and end up in a foreign body granuloma.⁶

The mosquito density, warm climate with an extended mosquito breeding season, outdoor human activities and close contact with dogs are some of the important risk factors regarding human infection.⁵

An average diameter of the adult worm of *D repens* is approximately 450 μ . These worms have longitudinal ridges on an external cuticle, 2-5 chord nuclei per section and robust muscle cells. They have rounded anterior end with buccal cavity. The male worms have a coiled tail with several perianal papillae and the female worms have a rounded short tail.⁷

The definitive diagnosis rests on surgical removal of worm/ nodule, followed by biopsy results. Microfilaria is extremely rare as copulation of the worms does not occur in infected humans and hence there is no need for chemotherapy.^{1,5} However, a few reported cases of meningoencephalitis secondary to *D repens* microfilaraemia were treated with albendazole and methyl prednisolone have showed good response^{2,5}.

Panfilial PCR can be performed for confirmation of diagnosis of *D repens* infection, but in India, owing to low prevalence rate, PCR methods and standard antibody detecting tests are not available. Recent concepts like strong expression of TGF- beta in human host tissues around subcutaneous *Dirofilaria repens* have been reported.⁸

In our case, fibroadenoma was the first clinical diagnosis made. It was only on histology that dirofilariasis in breast was diagnosed. Hence awareness about this infection is required.

4. CONCLUSION

Human dirofilariasis in breast is very rare. Medical awareness of this zoonotic infection is essential for a

correct diagnosis and diagnostic serological tests can improve the patient care.

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