

Case Report

Dirofilariasis of Breast Mimicking Malignancy – A Rare Entity

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ABSTRACT

Human dirofilarial infection usually presents as pulmonary coin lesion or as subcutaneous nodule. We report the case of a 60-year-old female presented clinically with swelling in the lower-outer quadrant of the right breast for 2 weeks. Ultrasound reported as atypical lesion suggest fine-needle aspiration cytology (FNAC) correlation and follow-up. Clinical examination – subcutaneous nodule of size 2 cm × 2 cm presents in the lower-outer quadrant. Clinical suspicious of carcinoma was considered and FNAC was done. Aspirated pus-like material and adult worm about 4 cm in length were attached to the needle. Smear was air-dried and stained with Giemsa. Smears were cellular and showed numerous neutrophils, eosinophils, and a few histiocytes in a necrotic background and also noted coiled adult dirofilarial worm. Cellblock was prepared and it showed the cut section of dirofilarial worm with cuticle, muscular layer, intestine, and reproductive tube. We report this case entity due to diagnostic confusion with breast malignancy clinically and radiologically.

KEYWORDS: Breast malignancy, *Dirofilaria*, ivermectin, mosquito, subcutaneous tissue

INTRODUCTION

Dirofilariasis is a zoonotic infection caused by filarial worm belonging to the genus *Dirofilaria*.^[1-3] Breast dirofilarial nodule is very rare and human subcutaneous dirofilariasis is caused by *Dirofilaria repens*, *Dirofilaria striata*, *Dirofilaria Tenuis*, and *Dirofilaria ursi*.^[4] Animals (dogs, cats, and foxes) are definitive hosts and humans are incidental hosts. Dirofilariasis is transmitted by the mosquito species such as *Culex*, *Aedes*, and *Anopheles*.^[5,6] Dirofilariasis is endemic in South India with very few case reports in North India. Dirofilariasis is endemic in Kerala due to warm climatic condition and mosquito vectors.^[2] Here, we are reporting a case of breast dirofilarial nodule mimicking malignancy radiologically and clinically.

CASE REPORT

A 60-year-old female presented clinically with complaints of swelling in lower-outer quadrant of the right breast for 2 weeks. Ultrasound revealed mildly lobulated hypoechoic space occupying lesion with minimal internal vascularity in lower outer quadrant of the right breast at lateral aspect-Suggestive of Atypical lesion.

Suggested Fine needle aspiration cytology (FNAC) correlation and follow up. Fibroadenosis – multiple tiny hypoechoic nodular areas scattered with dense glandular matrix in both breasts suggestive of fibroadenosis. Few reactive nodes on both axilla. The patient hematological parameters were normal. No eosinophilia was noted. On examination, subcutaneous nodule of size 2 cm × 2 cm presents in lower-outer quadrant. No skin changes/nipple retractions were seen. No lymph nodes were palpable during the ipsilateral and contralateral side. Clinical suspicious of carcinoma was considered and FNAC was done. Aspirated pus-like material and adult worm about 4 cm in length attached to needle. Smear was air-dried and stained with Giemsa. Smear was cellular and showed numerous neutrophils, eosinophils, and few histiocytes in a necrotic background [Figure 1]. Also noted coiled adult filarial worm, no ductal epithelial cells, and epithelioid cell clusters were seen [Figure 2]. Cellblock was prepared and it showed cut section of filarial worm

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with cuticle, muscular layer, intestine, and reproductive tube [Figure 3]. The patient was treated with combination therapy with ivermectin and doxycycline following which the patient developed dramatic response with gradual decrease in lump size and resolved completely.

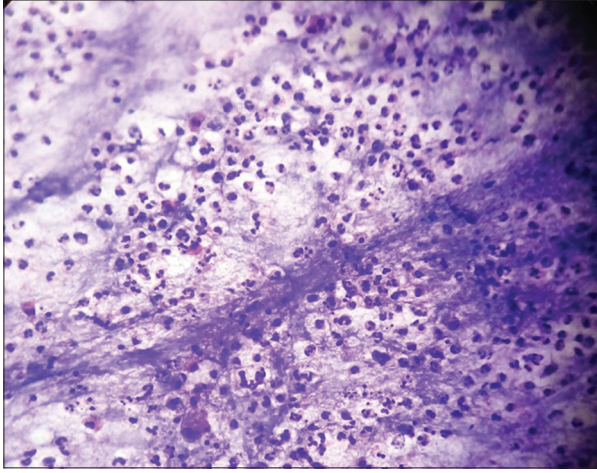


Figure 1: Giemsa stained smear shows eosinophils, neutrophils, and histiocytes

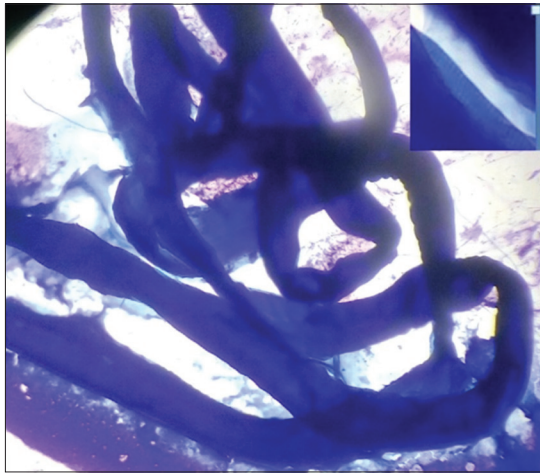


Figure 2: Giemsa stained dirofilarial worm

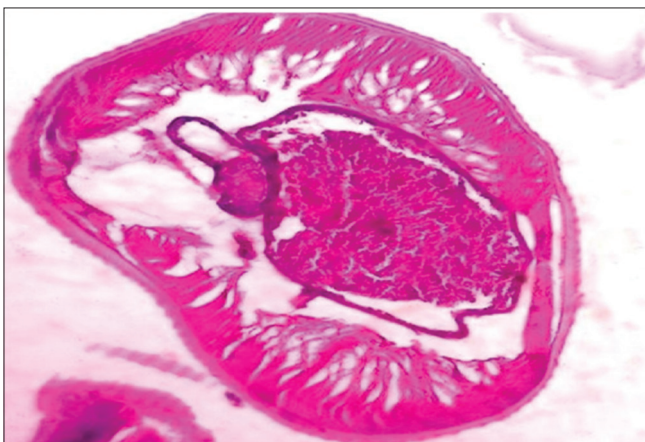


Figure 3: Cellblock preparation showing cut section of dirofilarial worm

DISCUSSION

Dirofilariasis is a parasitic infection caused by filarial nematodes.^[6] Six species known to cause human dirofilariasis are *D. repens*, *Dirofilaria immitis*, *Dirofilaria tenuis*, *D. striata*, *Dirofilaria Spectans*, and *D. ursi*. Among them, subcutaneous dirofilariasis is caused by *D. repens*, *D. striata*, *D. tenuis*, and *D. ursi*.^[1-3] In India, first case of dirofilariasis was reported in the year 1989.^[6] *Dirofilaria* produces subcutaneous nodule and produces microfilaria which enters the circulation and ingested by mosquito. Development occurs within 2 weeks and sexual maturation occurs in the natural host after several months. Third-stage larval form develops within mosquito and passes through a body cavity into proboscis which is then transmitted to a dog by the bite of mosquito. After entering subcutaneous tissue, it matures within 10–20 days following it can either die or reach small capillaries and migrate to cardiac or pulmonary circulation producing lesion.^[7] Humans are dead-end host and microfilaria will not be seen in the circulation. After invasion into the tissue, development occurs over a period of time without any response. Initial response is the foreign-body cell response which occurs when parasite dies and produces subcutaneous nodule. The most important risk factors are mosquito breeding, warm climate, and contact with pet history. Dirofilarial breast nodule mostly seen in the neck, extremity, and thoracic wall. Parasitic infestation in the breast is very rare and creates diagnostic confusion with carcinoma. Single subcutaneous nodule ranging in size from 1.5 cm to 2 cm is the most common clinical presentation.^[7-10] Granulomatous response by parasite leads to the formation of nodule. Examination of histological/cytological section of parasite confirms the diagnosis. Indented cuticular ridges differentiate *D. repens* from *D. Immitis*.^[7-10] Histological examination of parasite shows thick cuticular layer with striations, thick muscular layer, reproductive tube, and intestine. Laboratory diagnoses such as PCR and ELISA can be used further to confirm the diagnosis.^[1,3,11] Not much data are available on the effect of ivermectin and doxycycline over dirofilarial worms. However, some studies shown that doxycycline may have adulticide effect and combination with ivermectin have 73% adulticide effect.^[8,11,12]

CONCLUSION

Dirofilarial breast nodule is very rare and creates diagnostic confusion with carcinoma breast. Therefore, dirofilariasis should be considered in people from endemic areas presenting with breast swelling. The prevention can be done by achieving mosquito control using bed nets and insecticides and also by reducing parasitic infection prevalence among animal host.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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