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Case Report

Coexistence of filariasis with carcinoma breast – An incidental cytological finding

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Introduction

Filariasis is a major public health problem in the Indian sub-continent. It is transmitted by the *Culex* mosquito and is caused by 2 closely related nematodes: *Wuchereria bancrofti* and *Brugia malayi*. *Wuchereria bancrofti* accounts for 90% of cases of the world followed by *Brugia malayi* and *Brugia timori*.¹ Filariasis affects the lymphatic system with a predilection for lower limbs, retroperitoneal tissues, spermatic cord, and epididymis. Breasts are an unusual sites for filariasis. Sparse reports are available, where on FNAC of the breast lesion, filariasis was diagnosed.² Coexistence of microfilariae with carcinoma breast is extremely rare and only few case reports are available in the literature.³

Here we present an unusual case showing presence of microfilariae in fine needle aspirate from neoplastic breast lesion.

Case Report

A 40 year old female patient from Andhra Pradesh presently residing in a non-endemic area for the past 2 years, presented with a history of pain in the right breast and fever for 2 days with no other complaints. On clinical examination a single, lump was palpable in the left upper quadrant. It measured 6 × 4 cm in size, hard, mobile and nontender. No axillary lymphnodes were palpable. Mammogram showed a heteroechoic lesion in the left upper quadrant measuring 3.5 × 4.1 × 4.2 cm with well defined margins and posterior acoustic enhancement and reported as Breast Imaging-Reporting and Data System (BIRADS) 5 lesion; i.e. highly suggestive of malignancy. All other general and systemic examination, routine haemogram and biochemical tests were within normal limits. Differential leucocyte count showed no eosinophilia.

Fine needle aspiration cytology (FNAC) was done. Aspirates from the lump in the left breast yielded a small amount of purulent material. Leishman–Giemsa stained smears were moderately cellular and showed numerous polymorphs, eosinophils, and foamy histiocytes with a necrotic background. Few microfilariae of *W. bancrofti* were seen lying in a necrotic background, they were rounded anteriorly and tapering posteriorly [Fig. 1A]. These microfilariae had a clear space free of nuclei at the caudal end. Background also showed tight cluster of atypical ductal cells, with moderate cytoplasm, large round to oval nuclei with irregular nuclear contour and few with prominent nucleoli [Fig. 1B].

Later microfilariae were found in peripheral blood smears prepared from the midnight samples. The patient

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Fig. 1 – FNAC findings of breast aspirate (A) Leishman–Giemsa stain smear showing photomicrograph of microfilaria lying in a necrotic background (100×). (B) Leishman–Giemsa stain smear (400×) photomicrograph showing coiled microfilaria of *Wuchereria bancrofti* with a clear space free of nuclei at the caudal end along with a cluster of atypical ductal cells are seen with moderate cytoplasm, large round to oval nuclei with irregular nuclear contour and few with prominent nucleoli.

was started on antibiotics and Diethyl carbamazine citrate (DEC) for 3 weeks. Mean while, trucut biopsy was also done from the breast and it confirmed the diagnosis of invasive ductal carcinoma. Later patient underwent modified radical mastectomy. However Haematoxylin & Eosin (H&E) sections from the both, trucut biopsy and modified radical mastectomy specimen did not reveal presence of microfilariae. Presently patient is asymptomatic and on regular follow up.

Discussion

In 600 BC, *Sushruta* recognised the clinical manifestation of the elephantiasis and referred as elephantiasis arabicum.⁴ Filariasis is a global problem and in India maximum cases have reported from Uttar Pradesh, Bihar, Jharkhand, Andhra Pradesh, Tamil Nadu, Kerala and Gujarat.⁵

In India, *W. bancrofti* and *B. malayi* are the main species which cause lymphatic filariasis. Human serves as definite host and mosquito as vector (*Culex* for bancroftian and *Mansonia* for brugian filariasis). Adult worm resides in the lymphatic system of the man. Viviparous female worm gives rise to approximately 50,000 microfilariae per day.⁵

It is quite unusual to find microfilaria in routine cytological smears and body fluids. One possible mechanism is lymphatic and vascular obstruction leading to extravasation of blood and release of these microfilariae aberrant sites. There are few case reports of microfilaremia in bronchial aspirates, pericardial fluid, cervico-vaginal smears, joint aspirates, and thyroid masses.⁶

Incidental coexistence of microfilariae have also been found in various benign and neoplastic conditions like haemangioma of liver, meningiomas, carcinoma of uterine cervix, pharyngeal carcinoma and even leukaemia.⁷ Exact mechanism of this association is not known, however as

neoplastic lesions have rich blood supply, which can possibly explain the increase in the concentration of the microfilariae at the tumour site. Filarial infection of breast lesions, although unusual, commonly presents with a solitary palpable mass.¹ There have been reports where the filariasis of the breast has either mimicked malignancy or coexisted with it.⁸

In our case, On FNAC we found microfilariae with malignant ductal cells. However, we could not demonstrate microfilariae in trucut biopsy and modified mastectomy specimen. We feel that it is due to preoperative Diethyl carbamazine citrate (DEC) therapy causing eradication of microfilariae. Similar findings have been experienced by other authors also.³ Another interesting fact seen in our case was the presence of microfilaria in the peripheral blood with no associated eosinophilia; it is in contrast to other studies which showed the coexistence of peripheral blood eosinophilia with microfilariae in the aspirate.⁹

The drug of choice for filariasis is DEC, which is effective against both microfilaria and adult worms. The other drug used for this disease is Ivermectin with a single dose of 200–400 µg/kg. To conclude, the aim of presenting this case is to highlight the FNAC diagnosis of microfilariae at the unusual site and its coexistence with malignant breast lesion.

Conflicts of interest

All authors have none to declare.

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