

# Breast Filariasis: A Rare Cytomorphological Diagnosis

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## ABSTRACT

Lymphatic filariasis (LF), a mosquito vector-borne disease, is a major public health problem in many parts of the tropics. It is considered eradicable or potentially eradicable by the International Task Force for Disease Eradication. India contributes about 40% of the total global burden. Extranodal filariasis is a rare entity and breast is an uncommon site for filariasis with

only a few cases reported in the literature. The demonstration of parasite in aspirate plays a significant role in recognition of disease and institution of specific treatment. Fine needle aspiration cytology can be regarded as a safe and reliable initial step, which can provide the pathologists as well as the clinicians a definitive diagnosis within a short period of time.

**Keywords:** Extranodal; Filariasis; Breast; Fine Needle Aspiration Cytology

## INTRODUCTION

Lymphatic filariasis (LF), a mosquito vector-borne disease, is a major public health problem in many parts of the tropics and is considered eradicable or potentially eradicable by the International Task Force for Disease Eradication [1].

India contributes about 40% of the total global burden and accounts for about 50% of the people at risk of infection. Nine Indian states (Andhra Pradesh, Bihar, Gujarat, Kerala, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh and West Bengal) contribute to about 95% of total burden [2]. Filariasis affects the lymphatic system with a predilection for lower limbs, retroperitoneal tissues, spermatic cord, and epididymis [3]. Extranodal filariasis is a rare entity, and breast is an uncommon site for filariasis with only a few cases reported in the literature [4].

Despite high incidence of filariasis, microfilaria in fine needle aspiration cytology (FNAC) is not a very common finding [5]. Preoperative categorization of breast lesions is of utmost importance for management of the patient with breast lump and FNAC, a simple, rapid and safe method to diagnose breast lesions, has high sensitivity and specificity [6]. The demonstration of parasite in aspirate plays a significant role in the recognition of disease and institution of specific treatment [5].

We hereby report an unusual case of breast

filariasis where FNAC was used as an initial step in the diagnosis, resulting in prevention of unnecessary surgical intervention with mortality-risk associated with it.

## CASE REPORT

A 32-year-old female presented with chief complaint of a painless lump in the left breast at outpatient department, ESI-PGIMSR, Joka, Kolkata. The lump was painless, with history of gradual increase in size over one year. On local examination, an ill-defined lump, measuring 2 cm x 1.5 cm, was located at the upper inner quadrant that was soft to firm in consistency (Figure 1). Lump appeared fixed to the underlying breast tissue, but overlying skin, nipple and areola were free. There was no history of nipple discharge. Axillary lymph nodes were not palpable. With a provisional clinical diagnosis of benign breast disease, patient was sent to the Department of Pathology for FNAC as a first line screening modality.

Particulate material admixed with scanty fluid was aspirated on FNAC. Both May Grunwald Giemsa and hematoxylin and eosin (H&E) were used for staining the FNA smears. On microscopic examination, the smears showed acinar and ductal cells of the breast, along with mixed inflammatory cells, and scattered macrophages. In this background was a coiled slender structure, with a sheath, and with nuclei

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throughout the body but not in the tail end, the typical morphology of microfilaria of *Wuchereria bancrofti* (Figure 2).

With the cytomorphological diagnosis of breast filariasis, the patient had peripheral blood smears performed at midnight, but no microfilariae were found on three consecutive nights. Patient's routine hematological and biochemical investigations were also within normal limits. The patient was treated with diethylcarbamazine (DEC) 6mg/kg/day for 12 days, and was doing well at 6 month follow-up, with no palpable lump or swelling in the same location.

## DISCUSSION

The earliest medical literature documenting filariasis goes back to 600 BC when Sustruta recognized the clinical manifestation of elephantiasis and referred to it as elephantiasis arabicum. Of the eight identified species of filarial parasite, only three (i.e., *Wuchereria bancrofti*, *Brugia malayi*, and *Brugia timori*) are known to cause lymphatic filariasis [3].

Filariasis of the breast is an extremely rare condition prevalent in endemic areas like India and Sri Lanka where *W. bancrofti* is the predominant species. It has not been reported from areas endemic for *B. malayi*. Most common site is upper outer quadrant of breast, but central or periareolar nodules occur with notable

**Figure 1:** An ill-defined lump, measuring 2 cm x 1.5 cm, located at inner quadrant



frequency [7]. Most lesions involve subcutaneous tissue and present as a hard mass with cutaneous attachment [8]. Kaur et al [4] reported a case of breast filariasis diagnosed on FNAC mimicking an inflammatory carcinoma along with axillary lymphadenopathy. However, there was no palpable mass and only an indurated area involving the upper outer quadrant of breast was evident. The present case did have an ill-defined palpable lump located at the upper outer quadrant of the breast but no axillary lymphadenopathy, and hence, a clinical diagnosis of benign breast disease was made.

When the larval form of the parasite enters the lymphatics of the breast tissue, it causes lymphangitis, fibrosis and disruption of lymphatic drainage [8]. Tissue immune response to the adult worm and larva is variable, with minimal reaction to the intact worm. Marked inflammation with eosinophil predominance, and often epithelioid cell granuloma formation, occurs in case of degenerating parasite [9]. Sometimes, accompanying inflammatory changes in overlying skin including edema of the skin (peau d' orange) and enlargement of axillary lymph nodes make it clinically indistinguishable from carcinoma [8].

Parasite detection within breast tissue can also be aided by ultrasonography and mammography. The live wriggling adult worms often show rigorous movement in the body, which on real time ultrasound reveals a characteristic appearance described as "filarial dance". The adult worm may calcify and hence can be detected on mammogram as elongated, serpentine non ductal calcifications without evidence of irregularity or pleomorphism. The location in the connective tissue not related to the ductal units helps in differentiating the parasite from the calcification seen in breast carcinoma on mammography [10]. However, besides *W. bancrofti*, other parasitic diseases can also cause soft tissue calcifications like cysticercosis, dracunculiasis and other filarial infections such as onchocerciasis and loiasis [11].

Several studies have noted that nocturnal microfilaremia could not be demonstrated even with diethylcarbamazine provocative test, suggesting that FNAC is useful in the primary diagnosis and microfilaremic infections [5]. With FNAC, the typical morphology of the adult worm and larval forms are identified and a definitive diagnosis of filariasis of the breast can be made in this unique case where nocturnal microfilaremia was not present. In our case, we were also unable to find nocturnal microfilar-

mia; however, we did see morphology consistent with microfilaria of *W. bancrofti*. To confirm our diagnosis, we conducted a therapeutic trial and a good response to therapy confirmed our clinical diagnosis of breast filariasis. The drug of choice for filariasis is DEC which is effective against both microfilaria and adult worms. Recent studies showed a single dosage of 6 mg/kg is as effective as an earlier prescribed dosage of 6 mg/kg/day for 12 days [12]. The present case was also treated with DEC for 12 days and is doing well after six months of follow-up.

To conclude, FNAC can be regarded as a safe and best initial step for diagnosis, which can provide the pathologists as well as the clinicians a definitive diagnosis within a short period of time. Prompt recognition of the disease on FNAC and institution of the specific treatment results in avoidance of unnecessary costly diagnostic modalities and surgical intervention.

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**Figure 2:** Coiled and uncoiled slender structure of microfilaria, with a sheath, and nuclei throughout the body but not in the tail end. Note a few scattered ductal epithelial cells in the background.

