

# Breast Filariasis Presenting as a Cystic Mass: Diagnosis by Fine-needle Aspiration Cytology

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## ABSTRACT

Lymphatic filariasis (LF) is caused most commonly by *Wuchereria bancrofti* in India. LF has an initial phase of asymptomatic microfilaraemia and advanced phases of acute, chronic, and occult clinical manifestations. Involvement of breast occurs in chronic phase of infection. Pathologically, breast filariasis may present as tumor, or abscess or cystic lesion with or without lymphadenopathy. Diagnosis is done by detection of adult worms, eggs, and microfilariae in blood or tissues, as well as information about the geographic region. Here, a case of cystic breast filariasis diagnosed by fine-needle aspiration cytology in a 45-year-old female residing in endemic area is reported.

**Keywords:** Breast cyst, Breast diseases, Fine needle aspiration cytology, Lymphatic filariasis, Microfilaria, *Wuchereria bancrofti*

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## INTRODUCTION

Lymphatic filariasis (LF) is the second leading cause of long-term disability in the world. Currently, it is estimated that 120 million people in 83 countries of the world are infected with filarial parasites, and about more than 1.1 billion people are at risk of acquiring infection. From the infected people, more than 40 million are severely disfigured and disabled by filariasis and around 76 million are apparently normal but have occult filariasis with internal damage to lymphatic and renal systems. As per WHO report, the developing countries like India, Indonesia, Nigeria and Bangladesh contribute about 70% of the global infection.<sup>1</sup>

Filariasis is a major public health problem in developing countries and India contributes about 40% of the total global burden and accounts for about half of the population are at risk of infection.<sup>1</sup> Burden of indigenous filariasis mainly reported from 20 States/UTs namely Andhra Pradesh, Assam, Bihar, Chhattisgarh, Goa, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu, Uttar Pradesh, West Bengal, Puducherry, Andaman and Nicobar Islands,

Daman and Diu, Lakshadweep, and Dadra and Nagar Haveli. From these States/UTs, 250 districts are identified as endemic area for filariasis and approximately 600 million people are at risk of infection. North-Western States/UTs like Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Chandigarh, Rajasthan, Delhi, Uttaranchal and North-Eastern States namely Sikkim, Arunachal Pradesh, Nagaland, Meghalaya, Mizoram, Manipur, and Tripura are identified to be free from indigenous filariasis. It is considered as a neglected tropical disease and can be eradicated. So, Government of India has started National Health Policy since 2002 to eliminate LF by 2015.

LF infects the lymphatic system and clinically presents as acute dermato-adenolymphangitis, acute filarial lymphangitis, acute epididymo-orchitis, acute funiculitis, lymphoedema, hydrocele, elephantiasis, chyluria, hematuria, tropical pulmonary eosinophilia, (TPE) and filarial granulomata.<sup>2</sup> Occult filariasis is the condition in which the classical clinical manifestations as well as blood film for microfilaria are negative, but the organism may be found in the tissues. TPE is the classical example of occult filariasis.

Infection of lymphatics of the breast by filariasis is rare, and patients commonly manifest as breast lumps.<sup>3</sup> Breast filariasis presenting as cystic lesion is documented in very few cases.<sup>4,5</sup> Bapat *et al.* have detected microfilaria in breast aspirate and histologically shown lymphangiectasia in structurally normal breast tissue with edema and eosinophilia in the same lesion.<sup>4</sup> We hereby report a case of cystic breast filariasis, where confirmatory diagnosis was done by fine-needle aspiration cytology (FNAC), preventing unnecessary surgical intervention.

## CASE REPORT

The 45-year-old female presented with painless lump in the left breast which was gradually increasing in size since one year. On local examination, an ill-defined lump, measuring 4 cm × 3 cm was located in central region just beneath the nipple and areola. It was soft to firm in consistency. On pressing no nipple discharge was coming out. Hyperemia in the overlying skin was seen, but the changes of peau d' orange was not seen. Bilateral axillary nodes were not palpable. The clinical impression was breast neoplasm and the patient was sent for FNAC.

About 4 ml clear serous fluid was aspirated on FNAC. The smears made from the fluid showed many sheathed microfilariae (Figure 1) containing nuclei throughout the body except in the tail end (Figure 2). These anatomical landmarks are characteristic of microfilaria of *Wuchereria bancrofti* species. Scattered inflammatory cells were seen in the background. It was reported as cystic breast filariasis.

The patient was advised to do blood film for microfilaria at midnight. However, no microfilariae were detected on three consecutive blood films. Patient's routine investigations were also within normal limits. The patient was treated with diethylcarbamazine as per the National filariasis control program guidelines for treatment of LF, and the swelling has resolved at 6 months follow-up.

## DISCUSSION

Filariasis caused by parasites that live in the human lymph system is called LF. Three parasites causing LF in human are *W. bancrofti*, *Brugia malayi*, and *Brugia timori*. *W. bancrofti* and *B. malayi* are two organisms only found in India. Microfilaria of both the organisms exhibit nocturnal periodicity.

Filariasis of breast is uncommon and clinically presents as a unilateral painless solitary breast mass, either in the upper and outer quadrant, or central region or

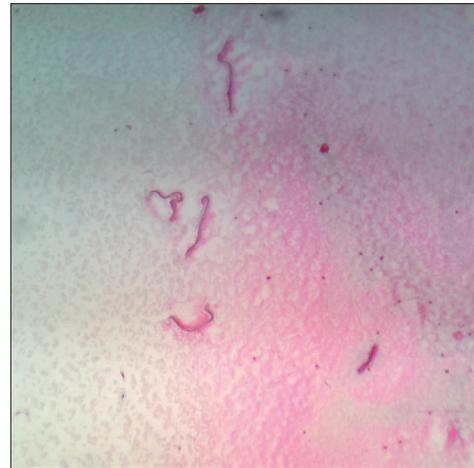


Figure 1: Many microfilaria with scattered inflammatory cells (Leishman, ×10)



Figure 2: Sheathed microfilaria with tail end is devoid of nuclei (*Wuchereria bancrofti*) (Leishman, ×40)

periareolar region.<sup>6</sup> In few cases multiple lesions may be seen. The present case presented with ill-defined palpable lump in the central region just beneath the nipple and areola with hyperemia in the overlying skin, but without axillary lymphadenopathy.

Pathologically, breast filariasis commonly presents as a tumor-like mass, measuring 1-3 cm in diameter. Gross lesions show firm, gray-white tissue, which tends to merge with breast parenchyma. Center becomes soft, degenerated and may form abscess. Eosinophilic abscess is common. Granuloma is more commonly seen in association with degenerating organism. Nodal enlargement may be seen and microfilaria can be detected from the node. However in some cases, nodal enlargement may be due to lymphangitis and reactive hyperplasia without microfilaria.<sup>7</sup> In our case, needle aspiration from the cystic lesion yielded clear aspirate, comprising of scattered inflammatory cells and many sheathed microfilaria of *W. bancrofti* species.

A definitive diagnosis is made by microscopic detection of microfilariae, adult worms and eggs either in the blood or occasionally in the cytological and histological samples.<sup>6,8</sup> Most commonly used diagnostic tool is night blood films for microfilaremia. Other diagnostic tools currently available are *W. bancrofti* antigen detection test, filaria antibody detection tests and polymerase chain reaction techniques in humans and mosquitoes for detection of filarial infection.

Other complementary diagnostic modalities include ultrasonography and mammography. Sonographic examination may reveal a “filarial dance sign” due to free movement of microfilaria, within the cystic lesion, which is diagnostic of lymphatic breast filariasis.<sup>9</sup> Mammographic findings in a classical case are elongated, serpentine, calcifications in connective tissue, not related to ducts. Additional findings in mammography include areas of residual microcalcification or curvilinear microcalcification in areas of degenerated and calcified organisms.<sup>10</sup>

## CONCLUSION

Filariasis of breast should be considered in the differential diagnosis of breast lump in endemic areas. For cytodiagnosis of filariasis, a high index of suspicion, along with careful and thorough screening of the FNAC smears for filarial organisms is recommended.

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**How to cite this article:** Vikas B, Panda KM, Reena N, Chandra AP. Breast Filariasis Presenting as a Cystic Mass: Diagnosis by Fine-needle Aspiration Cytology. Int J Adv Health Sci 2015;2(4):1-3.

**Source of Support:** Nil, **Conflict of Interest:** None declared.