

# Breast Filariasis Presenting Fibroadenoma like Nodules: A Rare Diagnosis

PRABHAT KUMAR (✉ [prabhatkmr66@gmail.com](mailto:prabhatkmr66@gmail.com))

Indira Gandhi Institute of Medical Sciences <https://orcid.org/0000-0002-0187-7870>

J Priyadharisini

Sri Lakshmi Narayana Institute of Medical Sciences

Ashish Ranjan Singh

Indira Gandhi Institute of Medical Sciences

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## Research Article

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# Abstract

India has still not eradicated filariasis, which is still endemic throughout the country. This study focuses on the breast as a non-typical but not uncommon site of breast disease characterized by nematodes causing obstruction of lymphatic vessels caused by filariasis. The case described herein involves a 26-year-old married female who presented as a subcutaneous nodule in her left breast. Clinical interrogation of this case as part of the pathological diagnosis, phlebotomy was performed by venepuncture in order to examine peripheral blood smears under a microscope. Nonetheless, the peripheral blood smear did not show microfilariae of the disease. Furthermore, fine needle aspiration cytology was also performed to identify possible things for the study. It was diagnosed that filariasis with fibroadenoma was found to be carrying microfilariae present in fine-needle aspiration cytology smears of various lesions. Conclusively the lymphatic swelling was confirmed to be caused by *Wuchereria bancrofti* in fine-needle aspiration cytology examination without evidence in peripheral blood smears. It was shown that the subject had filariasis, and the patient responded well to daily treatment with diethylcarbamazine citrate for 42 days.

## Introduction:

It is unusual for filariasis to affect the breast, but it is not unusual for parasitic worms to infest or transmit in the breast (Parashar et al. 2020). The effects of filariasis can be both systemic and subcutaneous. Chronic filariasis can lead to enlargement and hardening of tissues, or elephantiasis, and is caused by swelling of tissues. (Shenoy. 2008). A whopping 120 million people in the world are currently suffering from filariasis and more than a billion are at risk of infection (Gordon et al. 2018). Microfilaria have been found in the tissues of the thyroid, soft tissues, breasts, hydrocele fluid, and cervical smears. Microfilaria have also been found in the tumour fluid of patients with various cancer types according to Prasoon et al. (2020). Lymphatic filariasis is a major public health issue in tropical countries such as India, China, the West Indies, Japan, and parts of Africa. (Singh et al. 2004). The disease is profoundly disfiguring visible manifestations all over India, especially in states like Pondicherry, Tamil nadu, Uttar Pradesh, Bihar, Jharkhand, Andhra Pradesh, Orissa, Kerala, and Gujarat (Parija and Garg 2010). Filaria disease is caused by pathogenic nematodes which primarily cause inflammation of lymph nodes, fever, and lymphedema (Makepeace et al. 2012). Microfilaria may be sheathed or unsheathed. Microfilaremia, Microfilaria load, and Microfilaria bancrofti are the sheathed microfilaria that has apparent envelope surrounding microfilariae infixed and stained blood smears (Mathison et al. 2019). Microfilariae perstans and Micro-filariaeozzardi fall into the unsheathed category (Brothwell 1967). Microfilaria have been detected on fine needle aspiration cytology (FNAC) at different sites like lymph node, thyroid, liver, lungs, breast and small number of cases have been reported in the bone marrow and body fluids (Sinha et al. 2014). However, Singh et al (2011) also reported that filariasis presenting as a subcutaneous nodule is very rare. A majority of infected individuals are asymptomatic especially in filarial endemic communities (Manego et al. 2017). The conventional mode of diagnosis of filariasis is by demonstration of microfilaria in peripheral blood smear. Despite the high incidence, it is infrequent to find microfilariae on FNAC smears and body fluids (Gupta 2021). There are only a few reports in the literature with significant

numbers of breast filariasis cases diagnosis of breast filariasis with fibroadenoma-like lesions. In the present study, we presented a rare case identification of microfilarial nodule over the breast.

## Materials And Methods:

Fine needle aspiration was performed with a 23-gauge needle attached to 20 ml disposable syringe held in camico syringe holder. Aspirate was thick whitish in nature. The aspirate was smeared on slides and was stained with May Grunwald Giemsa and Papanicalou stains. The 26-year-old subject presented to the fine needle aspiration cytology clinic for diagnostic evaluation of a left breast lump. The subject complained of pain in the outer left quadrant of her breast for 2 months and was seen for evaluation of the suspicious lump. In this case, there was no history of fever, weight loss, or hunger loss and there was no present history of lactation or nipple discharge. The swelling was not associated with menstrual cycles.

## Result:

Breast ultrasound examinations were performed by a radiologist specializing in breast imaging. On careful examination of the breast, the lump was not within the breast parenchyma but an ill-defined subcutaneous nodule of size 3 x 2 cm. It was firm and non-tender. The skin surface did not show any erythema or induration and was not pinchable. The clinical examination also revealed the presence of 2 tiny subcutaneous swellings below the main lump. A contralateral breast and bilateral axilla were also found to be unremarkable. Cytological examination of the aspirates was moderately cellular with sheets of neutrophils and foamy histiocytes, many epithelioid histiocytes forming granulomas, and many microfilariae. They have sheathed organisms with the cephalic space and the tail tip free from nuclei. (Figure 1; A-C). Peripheral blood examination, buffy coat preparation, and serology all found no evidence of infections. Blood examination from samples collected after 10 p.m. was also negative for microfilaria.

## Discussion:

A subcutaneous filarial nodule over the breast can pose diagnostic difficulties when it comes to vector-borne diseases such as filariasis (Panda et al. 2015). Humans are definite hosts for filariasis, while *Culex* and *Anopheles* mosquitoes have been found as intermediate hosts in certain locations. (Dietrich et al. 2019). *W.bancrofti* is known to have a nocturnal periodicity and is very rarely implicated in subcutaneous filariasis (Nanduri & Kazura et al 1989 ), however, the microfilaria of *Loa loa* is reported as a strong association with subcutaneous filariasis and is periodicity during daytime among the mammography findings that were found serpiginous and elongated calcifications. In this case, the filarial dance, a motion of microfilaria in dilated lymphatic channels, supported the diagnosis of filariasis. The cytomorphological characteristics of microfilarial organisms were also observed in our study based on fine-needle aspiration smears showing features similar to those of *W.bancrofti*. It was very unusual of *W.bancrofti* to have subcutaneous manifestations alone without any evidence in the peripheral blood,

moreover, Lindau et al (2016) stated that peripheral blood examination did not reveal micro-filarial organisms in cases with subcutaneous manifestations.

## Conclusion:

Upon aspirating a subcutaneous swelling showing a granulomatous reaction, it is appropriate to look for organisms such as mycobacteria and filarial infection. Thus, the present case report will help clinicians and pathologists to understand that a thorough search for microfilaria organisms is required when cytopathology is performed on cases with raised breast lumps and granulomas. The report will also help inform clinicians and pathologists that a complete examination of granulomas and lumps in breasts for microfilaria organisms is mandatory.

## Declarations

**Conflict of interest:** All the authors jointly and privately sponsored this work and therefore, declare no conflict of interest.

### Ethics:

All procedures were conducted and sought with approval from the Research Ethics Committee of Jawaharlal institute of postgraduate medical education and research, Puducherry, India (Letter number: JIP/IEC/SC/2014/8/642).

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### Authors' contributions:

J.P, A. R. S. designed the study and diagnostic work. identified the microfilariae. J.P, A. R. S., the figures. J.P, A. R. S., P.K. wrote the manuscript with contributions from all authors. All authors approve the final version of the manuscript and agree to be held accountable for the work therein.

**Informed consent:** The authors have consent approval from the owners of the calves for this case report.

## References

1. Brothwell DR. 1967. The Amerindians of Guyana: a biological review. *Eugen Rev.* 59:22-45.
2. Dietrich CF, Chaubal N, Hoerauf A, Kling K, Piontek MS, Steffgen L, Mand S, Dong Y. 2019. Review of Dancing Parasites in Lymphatic Filariasis. *Ultrasound Int Open.* 5:E65-E74. doi:10.1055/a-0918-3678
3. Gordon CA, Jones MK, McManus DP. 2018. The History of Bancroftian Lymphatic Filariasis in Australasia and Oceania: Is There a Threat of Re-Occurrence in Mainland Australia?. *Trop Med Infect*

Dis.3:58. doi:10.3390/tropicalmed3020058

4. Gupta D, Gupta P, Jain S, Rahar S. 2021. Cytological diagnosis of microfilariae in clinically unsuspected cases: A retrospective review of 12 cases. *Cytopathology*. 32:807-812. doi:10.1111/cyt.13035
5. Lindau ST, Abramssohn EM, Baron SR, Florendo J, Haefner HK, Jhingran A, Kennedy V, Krane MK, Kushner DM, McComb J, Merritt DF, Park JE, Siston A, Straub M, Streicher L. 2016. Physical examination of the female cancer patient with sexual concerns: What oncologists and patients should expect from consultation with a specialist. *CA Cancer J Clin*. 66:241-63. doi: 10.3322/caac.21337.
6. Makepeace BL, Martin C, Turner JD, Specht S. 2012. Granulocytes in helminth infection – who is calling the shots?. *Curr Med Chem*.19:1567-1586. doi:10.2174/092986712799828337
7. Manego RZ, Mombo-Ngoma G, Witte M, Held J, Gmeiner M, Gebru T, Tazemda B, Mischlinger J, Groger M, Lell B, Adegnika AA, Agnandji ST, Kremsner PG, Mordmüller B, Ramharter M, Matsiegui PB. 2017. Demography, maternal health and the epidemiology of malaria and other major infectious diseases in the rural department Tsamba-Magotsi, Ngounie Province, in central African Gabon. *BMC Public Health*. 17:130. doi:10.1186/s12889-017-4045-x
8. Mathison BA, Couturier MR, Pritt BS. 2019. Diagnostic Identification and Differentiation of Microfilariae. *J Clin Microbiol*. 57: e00706-19. doi:10.1128/JCM.00706-19
9. Nanduri J, Kazura JW. 1989. Clinical and laboratory aspects of filariasis. *Clin Microbiol Rev*. 2:39-50. doi:10.1128/CMR.2.1.39
10. Panda DK, Mohapatra DP, Mohapatra MM. 2015. Breast filariasis or inflammatory breast carcinoma? Reaching a diagnosis. *BMJ Case Rep*. bcr2015212254. doi:10.1136/bcr-2015-212254
11. Parashar C, Gupta A, Singh P. 2020. Rapid Onsite Evaluation of Unstained Cytosmears: A Vermisurprise in the Breast. *J Cytol*. 37:108-109. doi:10.4103/JOC.JOC\_15\_19
12. Parija SC, Garg A. 2010. Seroprevalence of lymphatic filariasis at Puducherry. *J Parasit Dis*.34:20-23. doi:10.1007/s12639-010-0007-2
13. Prasoon D, Agrawal P. 2020. Wuchereria bancrofti and Cytology: A Retrospective Analysis of 110 Cases from an Endemic Area. *J Cytol*. 37:182-188. doi:10.4103/JOC.JOC\_59\_20
14. Shenoy RK. 2008. Clinical and pathological aspects of filarial lymphedema and its management. *Korean J Parasitol*.46:119-125. doi:10.3347/kjp.2008.46.3.119
15. Singh AK, Gupta P, Yadav S, Pahawa HS. 2014. Incidental detection microfilaria in subcutaneous breast nodule of lactating female fnac: a rare case report. *J Clin Diagn Res*. 8:FD03-FD4. doi:10.7860/JCDR/2014/7494.4418
16. Singh P, Chand N, Singal R, Madan M, Bala J. 2011. Filariasis presenting as multiple subcutaneous nodules: a rare case report. *Acta Med Indones*.43:249-251.
17. Sinha R, Sengupta S, Pal S, Adhikari A. 2014. Incidental diagnosis of filariasis in association with carcinoma of gall bladder: Report of a case evidenced on ultrasound-guided fine-needle aspiration cytology with review of the literature. *J Cytol*. 31:174-175. doi:10.4103/0970-9371.145662

# Figures

## Figure 1

(A) Granuloma in PAP Stain (400x); (B) Microfilariae in PAP Stain(400x) and (C) Microfilaria in May-Grunwald-Giemsa Stain (400x).