

## Original Article

# Incidental Cytological Findings of Microfilaria at Unusual Sites with Varied Clinical Presentation : A Retrospective Study

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**Background :** Filariasis is one of the major health concerns of tropical country like India, where it remains undiagnosed in conventional test but accidentally detected in routinely advised Fine Needle Aspiration Cytology (FNAC) and fluid analysis test for different clinical diseases. Peripheral blood smear examination is usually done to detect Microfilaria, but it is difficult to detect it in routine peripheral blood smears. This study aims to highlight the importance of cytology as very effective diagnostic tool for diagnosis of Microfilaria.

**Material and Methods :** The study was conducted in Department of Pathology, VIMSAR Burla Sambalpur, Odisha from June, 2020 to June, 2022. FNAC smears from superficial swelling, body fluid cytology and bone marrow smears were encountered in this study. FNAC and centrifused deposit of body fluid smears were stained with Diff Quik, PAP stain. Bone marrow smears were stained with Leishman stain.

**Results :** A total of ten cases were diagnosed with Microfilaria on microscopic examination. Out of these, maximum (4 cases) of Filariasis were from breast swelling.

**Conclusion :** The study highlights the importance of cytology as a cost effective tool for diagnosis of Microfilaria in endemic zones.

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**Key words :** Microfilaria, FNAC, Pleural fluid, Peripheral Blood smear, Bone marrow.

Filariasis is an endemic disease in many tropical and subtropical countries, it is endemic in India especially in states of Bihar, Jharkhand, West Bengal and Odisha, where it is regarded as major public health problem<sup>1</sup>. Out of 8 species of filarial worm which infects human, *Wuchereria bancrofti*, *Brugia malayi* are responsible for most of the cases in India. It spreads in human through *Culex* mosquito bites. In spite of high incidence and prevalence in Odisha Microfilariae are rarely found in cytology smear of fine needle aspiration cytology and body fluid. The literature shows a few report of Microfilariae found in swellings of body parts that includes skin, soft tissue, lymph node, breast, epididymis, bone marrow and pleural fluid<sup>2-4</sup>. Here we report a cytology study of ten cases which were diagnosed with microfilaria in Fine Needle Aspiration Cytology (FNAC) smears, pleural fluid cytology and bone marrow aspiration study. Most of the cases were associated with inflammatory reaction. The objective of this study was to assess the role of cytology in diagnosis of filariasis at different possible sites.

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### Editor's Comment :

- Screening of all types of Cytological and Bone marrow aspiration smears play a significant role for identifying microfilaria in endemic areas. Thus, it helps in prompt diagnosis and early treatment to prevent chronic manifestation and further complication.

### MATERIALS AND METHODS

The study was conducted in Department of Pathology, VIMSAR Burla, Sambalpur, Odisha during a period of 2 years from June, 2020 to June, 2022. A total of ten cases were diagnosed with microfilaria on microscopic examination by FNAC, Pleural Fluid Cytology and Bone Marrow Smears. FNAC slides were stained with Diff Quik, PAP stain. Body fluid were centrifused at 3000 RPM for 20 minutes and smears were prepared from sediment and then stained with Diff Quik, PAP stain. Bone marrow smears were stained with Leishman stain.

**Statistical Analysis :** Statistical analysis was done and data were presented as frequencies

**Ethical Clearance :** Taken from Institutional Research & Ethics Committee as per memo no.025-2022/I.F.O/51/Dt.17.05.2022

### OBSERVATIONS

Ten cases of Filariasis were diagnosed on microscopic examination from various sites (Table 1). Out of these ten cases maximum number were from

Table 1 — Clinical symptoms and Microscopic finding						
Age/Sex	Site	Size/Consistency	Duration	Fever	Aspirate	Microscopic finding
36/F	Rt breast	2x2cm/firm	1 month	A	Pus	Inflammation with MF
37/F	Lt breast	2x3cm/firm	3 months	A	Scanty fluid	Inflammation with MF
48/M	Rt breast	3x4cm/firm	2 months	A	Blood mixed	Inflammation with MF
25/F	Rt breast	2x1cm/firm	2 months	A	2ml fluid	Fibrocystic disease with MF
23/M	Rt arm	2x3cm/firm	1 year	A	Thick fluid	Inflammation with MF
59/M	Rt hand	2x1cm/firm	7 months	A	0.5 ml fluid	Inflammation with MF
40/F	Lt cervical LN	2x1cm/firm	1 month	P	Scanty fluid	Granuloma with MF
15/M	Penis	1x2cm/firm	1 month	A	Thick fluid	Inflammation with MF
54/M	Pleural fluid	-	-	P	Hemorrhagic	Inflammation with MF
43/M	Bone marrow	-	-	A	-	Hypoplastic marrow with MF

M = Male, F = female, Rt = Right, Lt = Left, A = Absent, P = Present, MF = Microfilaria

Subcutaneous filariasis (caused by *Loa loa*, *Mansonella Streptocerca*, *Onchocerca volvulus*), Serous cavity filariasis (caused by *Mansonella perstans* and *Mansonella ozzardi*).

breast. One of the cases was from male breast. The age of the patient range from 15 years to 59 years. The duration of symptoms, mostly swelling at various sites varied from days to months. The size of the swelling ranges from 1 cm to 4 cm. The aspirates were mostly fluid. Pleural fluid was haemorrhagic and the bone marrow aspirate was bloody. On microscopic examination, all microfilaria had sheaths, blunt head, curve and pointed tail which were free of nuclei at the tip of the tail (Figs 1-3). All the cases of the swelling showed microfilaria with inflammatory reaction except one case of breast showed microfilaria in a fibrocystic disease. Pleural fluid cytology smear had microfilaria with reactive mesothelial cells, lymphocytes and histiocytes (Fig 4). Bone marrow smear showed microfilaria in hypoplastic marrow (Fig 5).

**DISCUSSION**

Filariasis is a major health problem in many tropical countries including India. Eight known filarial worms have humans as a definitive hosts. These are divided into three groups according to the part of the body they affect : Lymphatic filariasis (caused by *Wuchereriabancrofti*, *Brugiamalayi*, *Brugiatimori*),



Fig 2 — Sheathed Microfilaria of wucheria bancrofti in Peripheral Blood smear Leishman (X500)



Fig 3 — Microfilaria in Peripheral Blood smear Leishman (X200)

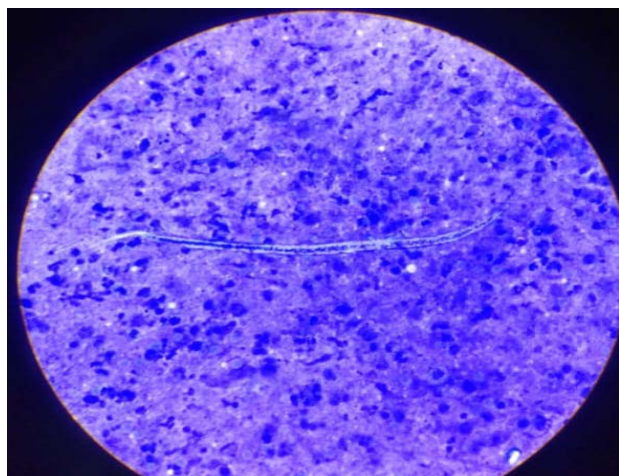


Fig 1 — Microfilaria in Cytology of Breast lump Diff Quik (X200)



Fig 4 — Microfilaria in Hypoplastic marrow Leishman (X200)

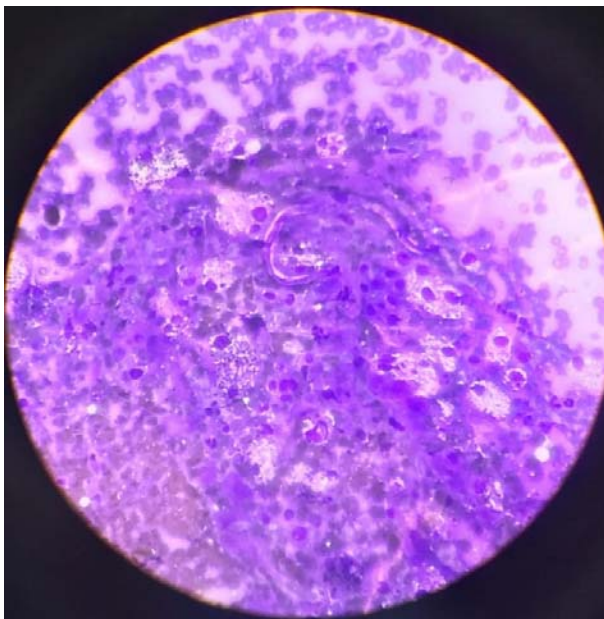


Fig 5 — Microfilaria in Pleural fluid showing histiocytes ,reactive mesothelial cells Diff Quik (X200)

In India, most of the Filariasis is caused by *W Bancrofti* (95%) and *Brugiamalayi* (5%)<sup>5</sup>. Most commonly affected organs are lymphatics of lower limbs, retroperitoneal tissue, spermatic cord, epididymis and breast. Adult worms of filaria involve the lymphatics and Microfilariae are released in peripheral blood. Most of the Filariasis cases are asymptomatic but clinically present with lymphangitis, edema of the limbs and genitalia and Eosinophilia<sup>6</sup>. In

endemic region, human beings are affected in early life and peak manifestations are found in 15-20 years. Diagnosis of Microfilaria is mostly peripheral blood smear from mid-night sample and detection of filarial antigen and antibody. Despite high incidence of filariasis in the Indian subcontinent, finding of Microfilaria in the cytology smears is unusual and incidental.

We found 4 cases of Microfilariae in breast aspirate showing different clinical scenarios so also different cytological findings. one of our case is a male patient and cytosmear revealed sheathed Microfilariae in a necrotic background comprising of good number of plump fibroblasts, histiocytes, few lymphocytes along with few eosinophils. In second case, smear show Microfilariae, plenty of polymorphs along with lymphocytes, cyst macrophages, foreign body giant cells and degenerating cells in a background of fluid. In third case smear showed Microfilaria, many eosinophils, polymorphs and lymphocytes. In fourth case, cytosmear show good number of Microfilariae along with few benign looking duct epithelial cells showing apocrine changes in a fluid background containing cyst macrophages. Previous worker reported similar finding of breast aspirate in their study<sup>7-9</sup>.

Finding of Microfilaria in subcutaneous nodule of upper limb is rare<sup>10,11</sup>. Here, we reported one subcutaneous swelling of right arm and other at first web space of right hand. On microscopy we found Microfilaria in a inflammatory background. Few study of lymphnode aspirate showed Microfilaria in reactive background<sup>12</sup>. In our case we found Microfilaria in granulomatous background. Most of the study have reported testiculosrotal region for involvement of Microfilaria<sup>13</sup>. We have a case of penis swelling with Microfilariae larva in bundles along with plenty of polymorphs and many fibroblasts.

Pleural fluid is uncommon site for microfilaria in endemic areas<sup>14</sup>. One of our case in pleural fluid cytology, centrifuged deposit smears revealed Microfilariae in a haemorrhagic background along with reactive mesothelial cells, lymphocytes, polymorphs and few histiocytes without the presence of any malignant cells. In few reported cases Microfilaria was demonstrated in the bone marrow. Bone marrow may be aplastic, hypoplastic, hyperplastic with normoblastic or megaloblastic maturation<sup>15</sup>. We have also a case of bone marrow containing Microfilaria in hypoplastic marrow, peripheral blood smear of the same patient showed pancytopenia and no hemoparasites.

### CONCLUSION

In filarial endemic areas careful screening of FNAC smears is helpful in detecting *Microfilaria* from different body swelling at different unusual site. This helps clinician to provide early treatment and to avoid unnecessary surgical procedure. In hemorrhagic pleural effusion, tuberculosis and malignancy are in list of differential diagnosis, rarely *Microfilaria* may be found which prove to be of great clinical significance. Presence of *Microfilaria* in the bone marrow is an incidental finding and it may cause pancytopenia with hypoplastic marrow, which needed further documentation and investigation.

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