Beyond the Norm: A Case Series on Filariasis in Unusual Anatomical Sites

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Abstract: Background: India bears an outsized share of the global filariasis[1] incidence—around 40 %—largely due to Wuchereriabancrofti, with Brugiamalayi contributing a smaller fraction in the country's south-western zone. The disease is transmitted through mosquitoes and typically presents as elephantiasis, chronic lymphedema, or lymphadenitis. Rarely, microfilariae can be detected in unusual locations such as the epididymis, breast, thyroid, salivary glands, cervicovaginal smears, ovarian cysts, and body fluids. We document six such unusual cases, of which three were encountered in FNA samples from the thyroid, breast and axillary lymph - node, one in an arm swelling, and two others—one in the peripheral blood of a CML patient and another in pleural fluid. In all cases, microfilariae were found incidentally, with no clinical evidence of filariasis. These results reinforce the necessity of considering filariasis in the diagnostic work-up, regardless of how atypical the clinical presentation may appear.

Keywords: filariasis, FNAC, effusion, breast, thyroid, CML.

Introduction:

In India, lymphatic filariasis constitutes a formidable health burden — an estimated 31 million individuals carry the infection and more than 450 million remain at risk, contributing about 40 % of the world's human LF cases[1]. The primary etiological agent is Wuchereriabancrofti, while Brugiamalayi is implicated in a smaller fraction of cases. Typical manifestations of W. bancrofti infection include elephantiasis, enduring lymphoedema, epididymitis, funiculitis, and lymphadenitis[2]. Historical references to the disease date back to the 6th century B.C., in the writings of Susruta, and the microscopic discovery of microfilariae in peripheral blood were achieved by Lewis in Calcutta in 1872."It is the second most common cause of permanent disability and deformity ranking just behind leprosy[3] . The consequences of Lymphatic filariasis go far beyond the persistent physical illness and economic losses — those affected often endure lifelong social stigma and significant psychological suffering.Literature provides limited case reports of microfilariae detection in locations like epididymis, breast, salivary gland, cervicovaginal smear, ovarian cyst, thyroid nodule, skin and soft tissue swelling, urine, lymph nodes, and effusion fluids[4].

We present six unusual cases of filariasis: detected in FNA samples from thyroid and breast lumps, one as arm swelling in an 18-year-old male, others from chronic myeloid leukaemia patient's peripheral smear, pleural fluid and axillary lymph node swelling.

Reporting these cases is important as microfilariae were incidentally found in all cases without any clinical signs of filariasis thus necessitating careful examination of FNA samples for microfilaria in endemic areas.

Case 1

A 12-year-old girl child came to ENT OPD with anterior neck swelling since 2 years (Figure 1).On examination this swelling was soft to firm in consistency moved with deglutition and measured 5 x 4 cms. There were tattoo marks over it indicating that she had some local treatment for it without any cure. Her thyroid function tests and peripheral blood smear findings were within the normal limit. Ultrasonography findings were consistent with benign morphology – TIRADS III.

A fine needle aspiration of this swelling was done in our cytology section yielding 5 ml of clear fluid. On microscopic examination microfilariae larvae was seen among red blood cells, and benign thyroid follicular cells in a thin colloidal background. (Figures 2, 3). The microfilaria was sheathed, which extended slightly beyond the larval body. The central body of microfilariae had nuclei, which appeared as granules with their absence at tail tip. We had also obtain night samples for peripheral smears which didn't show any haemoparasite. After diagnosis confirmation, the girl was treated with a 6-month course of diethylcarbamazine (DEC) in combination with albendazole and amoxicillin clavunic acid. The swelling subsided, and she was advised to continue treatment for an additional 6 months.

Case 2

A 38-year-old adult male presented with weakness, pain abdomen, and distension since 4 months. Clinical examination revealed pallor and abdominal ultrasonography indicated moderate splenomegaly. The complete blood count showed the following results: haemoglobin level of7.4 g/dL, total red blood cell count of 2.35 million/ mm3, platelet count of 400,000/mm3, and white blood cell count of 323,000/mm3. The differential being 50% neutrophils, 1% lymphocytes, 3% eosinophils, 1% monocytes, 2% basophils, 1% blasts 1% promyelocytes, 30% myelocytes, and 11% metamyelocytes. Peripheral smear showed a sheathed microfilaria, along with immature myeloid cells. (Figure 4) Based on these findings, a diagnosis of CML in the chronic phase was made. These microfilariae lacked terminal nuclei, resembling those of W. Bancroft. Cytogenetic studies confirmed the case to be BCR: ABL1 positive. The patient was adviced for tablet imatinib and diethylcarbamazine. This had positive responseand resulted in normalization of blood parameters within a month.

Case 3

We saw a 38-year-old female who reported a firm to hard lump—approximately 3 × 3 cm—in the upper-outer quadrant of her right breast for the past three months, with neither pain nor nipple discharge. Subsequent mammography disclosed a hetero-echoic lesion in the same quadrant, and the radiologist assigned it BI-RADS

Category 4, indicating a suspicious abnormality for which biopsy should be considered.

The overlying skin appeared hypopigmented. The lump FNAC yielded thin straw coloured fluid. On microscopic examination it showed the presence of microfilaria along with cohesive clusters of ductal epithelial cells in a greasy blood mixed background.(figure 8). No atypical cells or granuloma was noted in the smears examined. The lump was excised and was send for histopathological examination. On histopathology, double-barrelled uterus of the adult female filarial worm was seen. Peripheral smears were screened for any filaria worm which was negative and CBC findings didn't show any eosinophilia. (Figure 9). This was also given 6 months of diethylcarbamazine.

Case 4:

A 58-year-old man presented to the medicine outpatient department with left-sided chest pain and dyspnoea, along with a one-month history of cough and fever. Chest radiography revealed a left-sided pleural effusion. His complete blood count was within normal limits but showed a relative lymphocytosis. Three sputum examinations were negative for acid-fast bacilli and for malignant cells. Thoracentesis yielded deep-straw-coloured fluid, and cytological analysis of the pleural fluid demonstrated a total cell count of 1,600 cells/mm^3; microscopic examination revealed a lone larva of Wuchereriabancrofti amid many lymphocytes, some mesothelial cells, and occasional eosinophils dispersed within a protein-rich background. He was treated with a three-week regimen of diethylcarbamazine and exhibited rapid symptomatic improvement. A follow-up chest X-ray at week three demonstrated reduced effusion, and full clearance was confirmed by week six.

Case 5

A 45-year-old man presented with a painless subcutaneous swelling in his Right arm above the elbow joint in dorsal aspect for 2 weeks measuring approximately 3 × 2 cm (Figure 10). Overlying skin appeared normal The mass exhibited a soft consistency, caused no tenderness, and the skin covering it was unaltered. A lipoma was clinically presumed and the patient was scheduled for FNA; 2 mL of clear fluid was aspirated at the time of the procedure. On examination, smears showed the presence of microfilaria in a thin proteinaceous background. (figure 11).His blood smear examination was negative for microfilaria. All other systemic examinations and laboratory investigations were within normal limits.

Case 6:

40 years old women had a left axillary swelling for 3 months. On examination the swelling measured 3 x 3 cm and was soft to firm and non-tender. We had examined both her breasts which were normal. A FNA was done and blood mixed aspirate was

obtained. On microscopy it showed presence of microfilaria amidst reactive background.

Discussion:

In India, transmission of both Bancroftian and Brugian filariasis hinges on the female Culex pipiens fatigans mosquito. The parasite completes its adult reproductive phase in humans, while mosquitoes act as the intermediate host, nurturing the larval transformation. The female worm, significantly larger than the male, produces some 50,000 microfilariae each day, which mature into infective larvae in the mosquito and are then transmitted to humans through its bite. The presence of microfilaria was incidental in all six cases we reported without any clinical signs of filariasis. Literature provides limited number of the cases report in these anatomical sites. Yenkeshwar et al[5] and Chowdhry et al[6]have reported cases of microfilaria in thyroid aspirate. Potential pathways for microfilarial embedding in the thyroid are still theoretical, with hematogenous dissemination or atypical migration among the leading propositions. According to Chowdhry et al, the possible cause of thyroid lesions would be the rupture of vessels may have led to hemorrhage and release of microfilaria in the thyroid and subsequent histiocytic reaction. Diagnostic challenges arise due to the scarcity of reported cases and they need to be differentiated from other thyroid neoplasms and parasitic infections. Filarial breast nodules are rare involving most commonly the upper outer quadrant, but can present as central or periareolarnodules also[7]. When the breast's lymphatic channels are infested by larvae, they may undergo obstruction, inflammation, and fibrotic changes. The lesions usually involve the subcutaneous layer, manifesting as firm, adherent, non-tender nodules beneath the skin. Occasionally, the overlying skin becomes inflamed and edematous, producing a peaud'orange appearance, and nearby axillary lymph nodes may be enlarged. These features can closely simulate carcinoma of the breast[2,7], warranting consideration of this parasitic infection in differential diagnosis, especially in endemic zones.In our case, patient did not have rednessover the breast skin or axillary lymph node enlargement. Clinicians should remain highly vigilant in patients from endemic areas to avoid unwarranted surgery.

Although there are reports of an association between filarial parasites and malignancy, their role in tumorigenesis remains unclear. There have been reports published in the past of cases of chronic lymphocytic leukemia, CML in blast crisis, AML M4, and many more so in association with microfilaria by Jamal et al.[8],Rani[9] and Pahwa[10],Seema Tyagi[11], Rahman et[12] al. Jain et al[13]. Reported cases of microfilaria associated with B-acute lymphoblastic leukaemia and Hodgkin lymphoma in 2011. The compromised immune state of individuals with these haematological malignancies makes them more susceptible to parasitic infections.

Tuberculosis is the leading cause of pleural effusion in India. Filarial pleural effusion, though uncommon, is usually exudative and occurs due to inflammation and partial obstruction of the lymphatic vessels. Tropical pulmonary eosinophilia (TPE)

represents a form of hidden filariasis characterized by lung infiltrates and elevated peripheral eosinophil counts. In this case, tuberculosis was initially suspected; however, following its exclusion, filariasis without peripheral eosinophilia was determined to be the cause of the effusion. The presence of microfilariae in pleural fluid and the patient's marked improvement after treatment with diethylcarbamazine (DEC) confirmed the filarial origin. Commonly affected lymphatics include those of the lower limbs, spermatic cord, epididymis, and retroperitoneal region[14].Lymphatics involvement in the axillary node was seen in our case. Several investigators have posted that microfilariae traverse the vascular and lymphatic networks and, when found within tissue secretions or sloughed surface material, this likely reflects underlying lymphatic or vascular obstruction that precipitates extravasation and entry of microfilaria into the bloodstream[15].

Conclusion:

These cases highlight the incidental discovery of microfilariae thus underscoring the importance of thorough diagnostic evaluation even when filariasis is not initially suspected, to enable timelytreatment. In endemic regions of India, though there is high incidence of filariasis, Detection of microfilariae in superficial sites during FNAC is uncommon, underscoring the importance of meticulous smear examination. Clinicians should be mindful that filariasis can occasionally present with atypical features, which may lead to misdiagnosis. Therefore, in endemic areas, filariasis should be considered when evaluating unusual cystic swellings, as early treatment can reduce complications. Immunocompromised patients like those with hematologic malignancies or tuberculosis, may be more susceptible to incidental filarial infections due to the high endemicity, rather than a direct link with malignancy. Despite the advent of sophisticated tests grounded in immunochromatography, PCR and ELISA — which afford exceptional sensitivity and specificity — the incontrovertible benchmark for diagnosis continues to be the visual identification of microfilariae

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