

Unexpected Inhabitants: Microfilaria in Colloid Goitre - A Case Report and Review

Nikhil Kumar¹, Rajat Mondal², Debarshi Saha³, Rahul Paul⁴

¹Additional Professor, Department of Pathology & Lab Medicine, AIIMS Deoghar, Jharkhand, India. ²Demonstrator, Department of Pathology, Prafulla Chandra Sen Government Medical College and Hospital, Arambagh, Hooghly, West Bengal, India. ³Professor, Department of Pathology, SKS Medical College Durgapur, West Bengal, India. ⁴Assistant Professor, Department of Pathology, Gouri Devi Institute of Medical Sciences and Hospital, Durgapur, West Bengal, India

Abstract

Background: Colloid goitre is a common benign thyroid condition characterized by enlarged thyroid follicles filled with colloid. Microfilariae are parasitic nematodes that live in lymphatic vessels. Eight filarial species infect humans; of these, four—Wuchereria bancrofti, Brugia malayi, Onchocerca volvulus, and Loa loa—are responsible for most symptomatic filarial infections. The causative agent of Bancroftian filariasis and elephantiasis, *W. bancrofti* is primarily limited to tropical and subtropical regions. The adult filarial worm lives in the lymphatics and lymph nodes, especially those in the lower extremities. Fine needle aspiration cytology is very helpful in diagnosis of extranodal filariasis. The simultaneous presence of microfilaria within a colloid goitre in a 12-year-old child is an extremely rare occurrence with few reported cases. We provide a thorough examination of this unusual association and discuss its clinical, pathological, and diagnostic implications.

Keywords: Colloid goitre, FNAC, Filaria-endemic zones, microfilaria.

Received: 10 February 2025

Revised: 20 May 2025

Accepted: 19 August 2025

Published: 06 September 2025

INTRODUCTION

Filariasis is a major health issue in tropical countries, including India, particularly in endemic zones. Filariasis in India is caused by two closely related nematode worms: *Wuchereria bancrofti* and *Brugia malayi*. The disease primarily affects the lymphatic system of the body.^[1] Filariasis, a chronic parasitic infection transmitted by mosquitos, is the second leading cause of permanent deformity and disability worldwide, trailing only leprosy.^[2] Microfilariae have been discovered in aspirates from the breast, lymph nodes, thyroid, soft tissues, lungs, ovarian cyst fluid, epididymis, bone marrow, bronchoalveolar fluid, hydrocele fluid, breast, gastric brushing, cervico-vaginal smear, and subcutaneous swelling.^[3] We present a case report of the unexpected discovery of microfilaria in a 12-year-old female with colloid goitre.

Case Report

A 12-year-old female child presented to the surgical OPD with a 5cm X 4cm swelling in the anterior midline neck for the last two years [Figure 1]. On examination, the swelling was found to be non-tender, soft to firm, and moveable with deglutition. Routine haematological investigations are within normal limits, except for eosinophilia (AEC=650/ μ l). Thyroid function tests were within the normal range. The rest of the physical examination was unremarkable. FNAC was performed with 24 gauge needle and 10 ml syringe, and blood mixed colloidal material was aspirated. Smears were prepared, fixed in 95% alcohol, and stained using the Papanicolaou and May-Grunwald-Giemsa staining methods. Microscopical examination revealed the presence of

numerous microfilariae, a few benign thyroid follicular cells, and occasional macrophages in the blood mixed colloidal background [Figure 2]. These microfilariae were sheathed, with the sheath longer than the body and the tail tip free of nuclei [Figure 3].



Figure 1: shows anterior midline neck swelling in a 12-year-old girl

Address for correspondence: Dr. Nikhil Kumar, Additional Professor, Department of Pathology & Lab Medicine, AIIMS, Deoghar, Jharkhand, India. E-mail: nikhilk211@gmail.com

DOI: 10.21276/amt.2025.v12.i3.38

How to cite this article: Kumar N, Mondal R, Saha D, Paul R. Unexpected Inhabitants: Microfilaria in Colloid Goitre - A Case Report and Review. Acta Med Int. 2025;12(3):73-75.



Figure 2: showed presence of microfilaria along with few benign thyroid follicular cells in a blood mixed colloid background

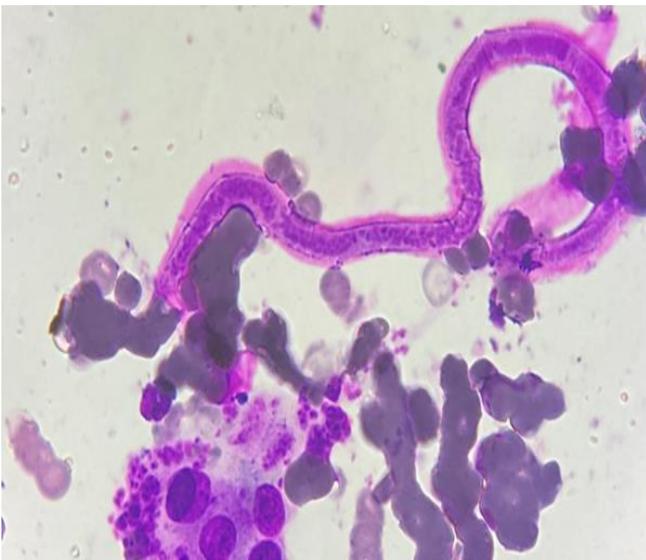


Figure 3: shows sheathed microfilaria with tail tip free of nuclei along with few thyroid follicular cells

DISCUSSION

Filariasis is a significant public health issue in tropical countries, including India. It is caused by the nematodes *Wuchereria bancrofti*, *Brugia malayi*, *B. timori*, *Loa-loa*, *Onchocerca volvulus*, *Mansonella perstans*, *M. ozzardi*, and *M. ozzardi*.^[4] Lymphatic filariasis can present with asymptomatic microfilaremia, hydrocele, lymphangitis, and lymphadenitis. The presence of microfilaria in colloid goitre calls into question traditional understandings of thyroid and parasitic pathology. Potential mechanisms of microfilarial infiltration into thyroid tissue are unknown, with hypotheses including hematogenous dissemination and aberrant migration pathways. The scarcity of reported cases creates diagnostic challenges, as does the need to distinguish between other thyroid neoplasms and parasitic infections.

According to some authors, the presence of microfilaria in thyroid aspirate can be explained by the parasite's lodging in the thyroid microvasculature and subsequent rupture.^[5,6]

Recently, specialized tests based on immune-chromatography, polymerase chain reaction (PCR), and enzyme linked immunosorbent assays (ELISA) with high sensitivity and specificity have been introduced, but the gold standard for confirmed diagnosis remains the presence of microfilaria in the smear.^[7] In our case, we discovered microfilariae in a FNA aspirate from a thyroid swelling but not in a peripheral smear.

Gangopadhyay et al discovered microfilariae in a single thyroid nodule in a 22-year-old female.⁸ Bhartiya R et al discovered microfilaria, as well as a few follicular cells, lymphocytes, macrophages, and colloid in the background of a 30-year-old female.^[8,9] Rekhi and Kane found microfilaria in a follicular thyroid lesion in a retrosternal thyroid mass in a 55-year-old male.^[10] Maheshwari et al. discovered microfilariae in a 25-year-old male patient with thyroid enlargement.^[11]

CONCLUSION

In filariasis-endemic areas such as Bihar, Uttar Pradesh, Jharkhand, Orissa, and Tamil Nadu, careful examination of FNA smears may reveal the presence of microfilaria, even if the physician has not suspected the disease. Early and prompt detection of microfilaria, as well as timely administration of specific treatment, will aid in the prevention of serious filariasis complications.^[12]

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Chowdhary M, Langer S, Aggarwal M, Agarwal C. Microfilaria in thyroid gland nodule. *Indian J Pathol Microbiol* 2008;51:94e6.
2. Newman TE, Juergens AL. Filariasis. In: StatPearls [Internet]. Treasure Island, FL: StatPearls Publishing; 2023. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK556012/>.
3. Hakeem A, Mahmood A. Microfilaria in a thyroid nodule discovered by fine needle aspiration cytology. *Tzu Chi Med J*. 2016;28(1):27-8. doi: 10.1016/j.tcmj.2014.07.007. PMID: 28757714; PMCID: PMC5509177.
4. Nutman TB, Weller PF. Filarial and related infections. In: Fauci AS, Braunwald E, Kasper DL, Hauser SL, Longo DL, Jameson JL, editors. *Harrison's Principles of Internal Medicine*. 16th ed. Vol. 1. New York: McGraw-Hill; 2005. p.1260-3
5. Varghese R, Raghuvver CV, Pai MR, Bansal R. Microfilariae in cytologicsmears: A report of six cases. *Acta Cytol* 1996;40:299-301.
6. Mehrotra R, Lahiri VL, Hazra DK. Microfilariae identified in FNA of a thyroid nodule. *Diagn Cytopathol* 1997;16:149-50.
7. Pietrzak D, Łuczak JW, Wiśniewski M. Beyond Tradition: Exploring Cutting-Edge Approaches for Accurate Diagnosis of Human Filariasis. *Pathogens*. 2024 May 24;13(6):447. doi: 10.3390/pathogens13060447. PMID: 38921745; PMCID: PMC11206659.
8. Gangopadhyay M, Biswas B, Chowdhury M, Deoghorla D. Microfilaria in thyroid aspirate - An unexpected finding. *J Cytol*.

- 2011;28(4):240-1. doi: 10.4103/0970-9371.86366. PMID: 22090709; PMCID: PMC3214480.
9. Bhartiya R, Mallik M, Kumari N, Kumar M. Microfilaria in fine needle aspirate of thyroid nodule. *Thyroid Res Pract* 2016;13:86-8.
 10. Rekhi B, Kane SV. Microfilariae coexisting with a follicular lesion in thyroid aspirate smears in an uncommon case of a retrosternal thyroid mass, clinically presenting as malignancy. *Cytojournal*. 2011;8:4. doi: 10.4103/1742-6413.76732. PMID: 21383959; PMCID: PMC3049240.
 11. Maheshwari V, Khan L, Mehdi G, Zafar U, Alam K. Microfilariae in thyroid aspiration smear--an unexpected finding. *Diagn Cytopathol*. 2008;36(1):40-1. doi: 10.1002/dc.20549. PMID: 18064692.
 12. Khare P, Kala P, Jha A, Chauhan N, Chand P. Incidental Diagnosis of Filariasis in Superficial Location by FNAC: A Retrospective Study of 10 Years. *J Clin Diagn Res*. 2014;8(12):FC05-8. doi: 10.7860/JCDR/2014/9906.5266. Epub 2014 Dec 5. PMID: 25653954; PMCID: PMC4316260.