

# A Case Report of Coexistence of Microfilaria with Anaplastic Carcinoma of Thyroid

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## Abstract

Even in the 21<sup>st</sup> century, filariasis still remains one of the major health problems plaguing India. Filariasis usually presents as superficial swelling and lymphedema. It is uncommon for microfilaria to be seen during routine cytological examination. It is even rarer to find microfilaria coexisting with neoplastic lesions. Ninety-five percent of cases of lymphatic filariasis are caused by *Wuchereria bancrofti* and are rarely found in the thyroid gland. Here, we report a case of a 47-year-old male who presented with midline neck swelling, for which he underwent fine needle aspiration cytology which showed microfilaria coexisting with anaplastic carcinoma of the thyroid gland.

**Keywords:** Anaplastic carcinoma, fine-needle aspiration cytology, microfilaria, thyroid gland

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## INTRODUCTION

In India and Southeast Asia, filariasis is a common public health problem.<sup>[1]</sup> The lymphatic system is mainly involved. Most commonly, lymphatics of lower limbs, retroperitoneal tissues, spermatic cord, epididymis, and mammary gland are affected.<sup>[2,3]</sup> It is difficult to find microfilaria in blood and fineneedle aspirates despite its high incidence in this zone due to the nocturnal periodicity of species endemic in India.<sup>[4]</sup> In the published cytology literature, there are few reported cases of coexistent microfilaria with neoplasm.<sup>[5]</sup> We report an interesting case of microfilaria with anaplastic carcinoma of thyroid to highlight the significance of cautious screening of smears in endemic areas. In our case, the finding of microfilaria in thyroid fine-needle aspiration cytology (FNAC) was by chance as there was no suggestive clinical history.

## CASE REPORT

A 47-year-old male presented to the surgery outpatient department with diffuse enlargement of the thyroid of 5-year duration. There was rapid increase in size for the past 6 months with sudden onset of change in voice for the past 15 days. On clinical examination, there was a 15 cm × 10 cm hard nontender swelling involving the entire thyroid gland with

retrosternal extension. Ultrasound of the thyroid gland showed diffuse enlargement with heterogeneous hypoechoic areas with multiple calcifying foci and evidence of increase vascularity. Serum T3, T4, and thyroid-stimulating hormone levels were within the normal limits. Aspiration cytology was performed using 10 ml disposable syringe and a 23G needle. There was hemorrhagic aspirate. Giemsa- and Papanicolaou-stained smears were prepared and examined. FNA smears were cellular and showed dyscohesive clusters of tumor cells. These cells showed marked nuclear pleomorphism with high nucleocytoplasmic ratio, coarse clumped chromatin, prominent nucleoli, and moderate amount of cytoplasm [Figure 1]. Few bizarre cells and tumor giant cells were also seen. Background showed mixed inflammatory cells. Also seen were microfilariae of *Wuchereria bancrofti* identified by hyaline sheath and multiple coarse, discrete nuclei extending from the head to tail, and the tail tip free of nuclei [Figures 2 and 3]. A diagnosis of anaplastic carcinoma of thyroid with microfilariae of *W. bancrofti* was made.

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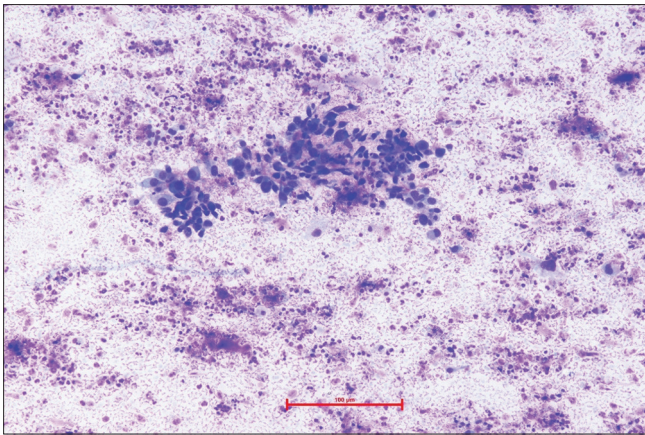
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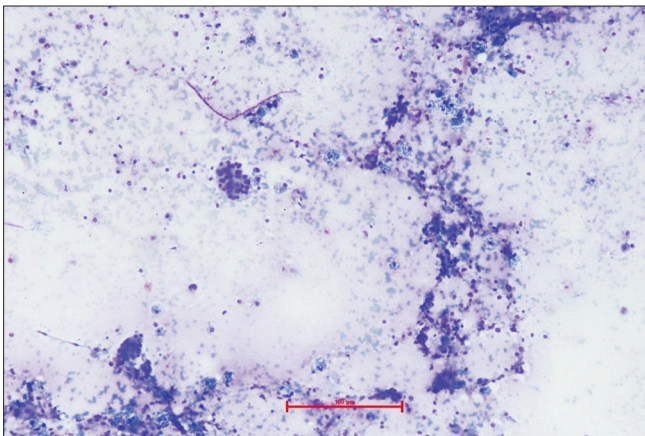
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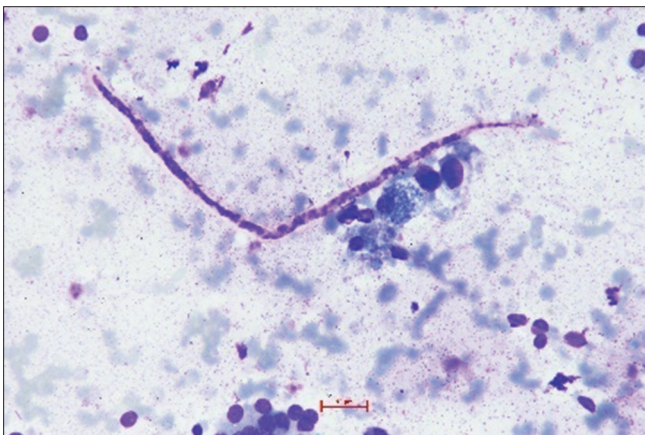
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**Figure 1:** Clusters of tumor cells showing marked nuclear pleomorphism (Giemsa,  $\times 100$ )



**Figure 2:** Clusters of thyroid follicular cells along with cyst macrophages and microfilariae of *Wuchereria bancrofti* (Giemsa,  $\times 100$ )



**Figure 3:** Microfilariae identified by hyaline sheath and multiple coarse, discrete nuclei extending from the head to tail with the tail tip free of nuclei (Giemsa,  $\times 400$ )

The patient's complete blood counts were within normal limits, and the peripheral blood film did not demonstrate microfilaria.

## DISCUSSION

Approximately 600 million people are residing in areas endemic for lymphatic filariasis in the Southeast Asian region. In India, it is most prevalent in Uttar Pradesh, Bihar, Jharkhand, Andhra Pradesh, Odisha, Tamil Nadu, Kerala, and Gujarat.<sup>[1]</sup> Nigeria is believed to bear the highest burden of lymphatic filariasis, with an estimated 80–120 million people at risk.<sup>[6]</sup> It is transmitted by *Culex* mosquito and is caused by two closely related nematodes of *W. bancrofti*, *Brugia malayi* and *Brugia timori* that are responsible for 95% and 5% of cases, respectively. Filariasis has a wide spectrum of presentation, including asymptomatic microfilaremia, acute lymphangitis and lymphadenitis, chronic lymphadenitis, edema of limbs and genitalia, and tropical pulmonary eosinophilia.<sup>[7]</sup> It is rare to find microfilaria in routine cytological smears. There have been few reports of cases of microfilaremia at various sites such as lymph node, breast lump, bone marrow, bronchial aspirate, nipple secretions, pleural and pericardial fluid, ovarian cyst fluid, and cervico-vaginal smears.<sup>[5,8]</sup> Thyroid and axilla are other rare sites from which microfilaria has been described.<sup>[2,3,5,8-11]</sup>

Our case is unique as the patient was diagnosed with anaplastic carcinoma of thyroid, which also showed microfilaria on FNAC. Walter *et al.* suggested that exfoliated surface material and tissue fluid shows microfilaria due to lymphatic and vascular obstruction with subsequent extravasations of the parasite.<sup>[7]</sup> However, similar explanation cannot be given for the presence of microfilaria in the thyroid FNAC. It has been hypothesized by some authors that lodging of the parasite in intrathyroid microvasculature and subsequent rupture could result in the presence of microfilaria in the thyroid.<sup>[5,9]</sup> In this present case, the patient has anaplastic carcinoma of thyroid with microfilarial larvae. This could be due to angiogenesis associated with malignancy, a vessel that may get ruptured and cause hemorrhage and release of microfilaria in the thyroid.<sup>[9]</sup>

Hence, microfilariae have been reported in association with various other neoplastic lesions such as squamous cell carcinoma of maxillary antrum, carcinoma of the pharynx, follicular carcinoma of thyroid, carcinoma of the breast, Ewing's sarcoma of the bone, fibromyxoma, lymphangiosarcoma, transitional cell carcinoma of bladder, carcinoma of the pancreas, squamous cell and undifferentiated carcinoma of the uterine cervix, metastatic melanoma to the bladder, seminoma of undescended testis, leukemia, non-Hodgkin's lymphoma, anaplastic astrocytoma of the thalamus, intracranial hemangioblastoma, meningioma, and craniopharyngioma.<sup>[10,11]</sup>

## CONCLUSION

FNAC smears in clinically unsuspected cases with the absence of microfilaria in the peripheral blood may show the presence of parasite. The present case draws attention to careful screening of cytology smears to detect microfilaria even in asymptomatic patients, especially in endemic areas to

avert morbid complications of the disease and also institute appropriate antifilarial treatment.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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### Conflicts of interest

There are no conflicts of interest.

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