

## CASE REPORT

### Microfilaria in hydrocele fluid cytology

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#### Abstract

Filariasis, a parasitic infection endemic in parts of India, Myanmar, islands of the South Pacific, West and East Africa and Saudi Arabia can be diagnosed from various types of cytopathological specimens. This case documents the detection of filarial infection from hydrocele fluid cytology in a 30-year-old Myanmar migrant worker in Malaysia.

**Keywords:** Cytology, hydrocele, chylous, microfilaria, *Wuchereria bancrofti*

#### INTRODUCTION

Microfilariae have been demonstrated in cytological preparations made from various sites including cervico-vaginal smears, pericardial fluid, hydrocele fluid, nipple secretions, bone marrow smears and fine needle aspiration cytological smears from varied sites including breast, thyroid, lymph node, salivary gland, liver and epididymis.<sup>1-7</sup> This paper reports the finding of microfilaria of *Wuchereria bancrofti* (Wb) species in cytological smears from a chylous hydrocele in a 30-year-old male migrant worker.

#### CASE REPORT

A 30-year-old Myanmar national who had been working in Malaysia for the past three years presented to the Urology clinic of the University Malaya Medical Centre, Kuala Lumpur with complaints of a left scrotal swelling for the past one year. He gave a history of a surgical procedure done for a similar complaint in Myanmar two years ago but had no records. On clinical examination, the patient was found to have a left sided hydrocele with no regional lymphadenopathy, fever, skin rashes or lymphoedema. A Jabouley's operation<sup>8</sup> was carried out. During the procedure, the spermatic cord was noted to be thickened, inflamed and infiltrated with adipose tissue. The testicular sac was also thickened. The hydrocele fluid was sent for cytological study and part of the tunica vaginalis was excised for histological examination. No haematological investigations were done at that time. The patient was given an

appointment for follow-up six weeks following the surgical procedure and was discharged. He however defaulted and was lost to follow-up.

#### Pathology

The hydrocele fluid received in the cytology lab, (10 ml of chylous fluid), was centrifuged and the deposit smeared onto clean glass slides. Smears were air-dried, fixed in methanol and stained with the May-Grunwald-Giemsa (MGG) stain. Two smears were wet-fixed in 95% ethanol and stained with the Papanicolaou (Pap) technique. After cytological study revealed microfilaria, the remaining fluid was sent to the Department of Parasitology where additional smears were prepared and stained with the Giemsa technique for better visualization of the nuclei. The patient was later recalled to the clinic where the diagnosis was confirmed on immunochromatographic (ICT) testing, thick blood smear and Knott's concentration technique. Blood for thick blood smears was taken in the daytime as the patient was not agreeable to make a nocturnal trip to the hospital.

#### Cytological, parasitology, serological and histological features

Smears of the hydrocele fluid stained with MGG, Pap stain and Giemsa showed sheathed microfilariae that had discrete nuclei throughout the body with an empty caudal space devoid of nuclei (Figures 1 & 2). Foamy histiocytes were seen aggregated around the cephalic end of some of the microfilariae (Figure 3). The thick blood smear showed microfilaria (Figure 4), albeit in

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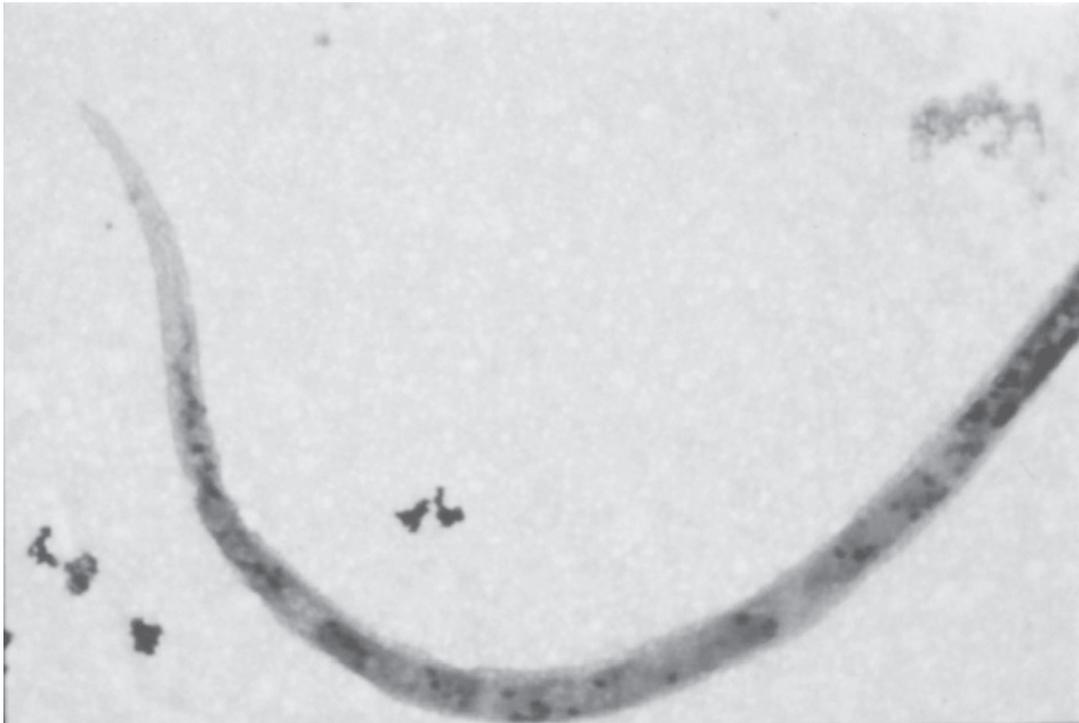


FIG. 1: Microfilaria in cytological smear of hydrocele fluid (note empty caudal space devoid of nuclei).  
Giemsa x 120

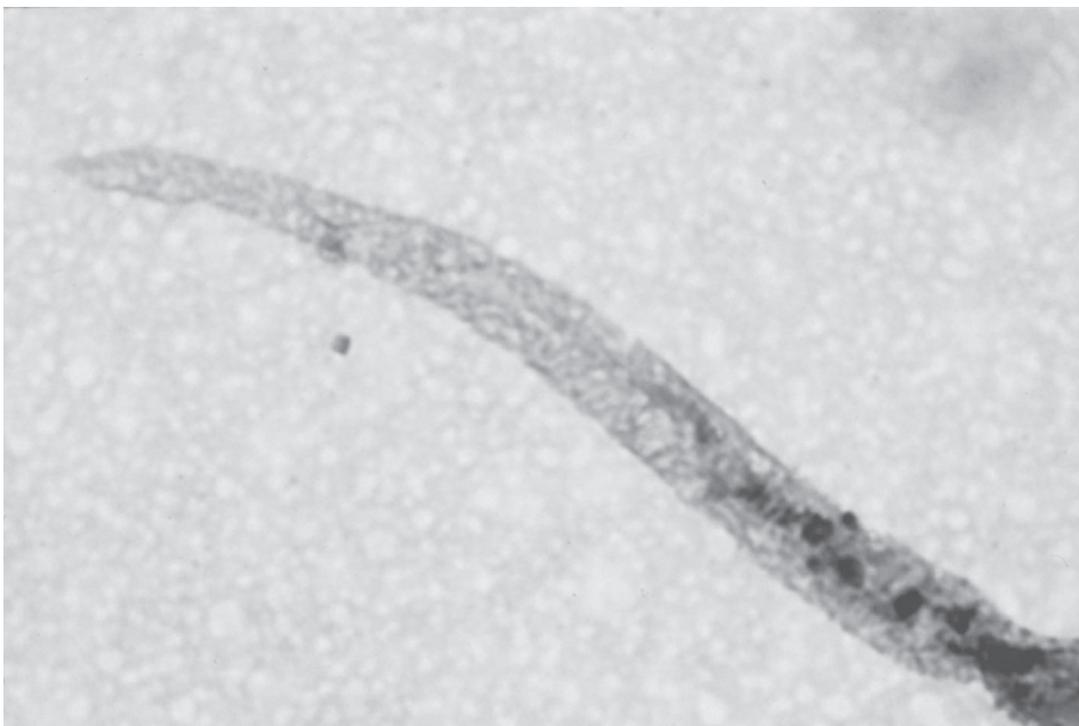


FIG. 2: Caudal space of microfilaria devoid of nuclei. Giemsa x 300

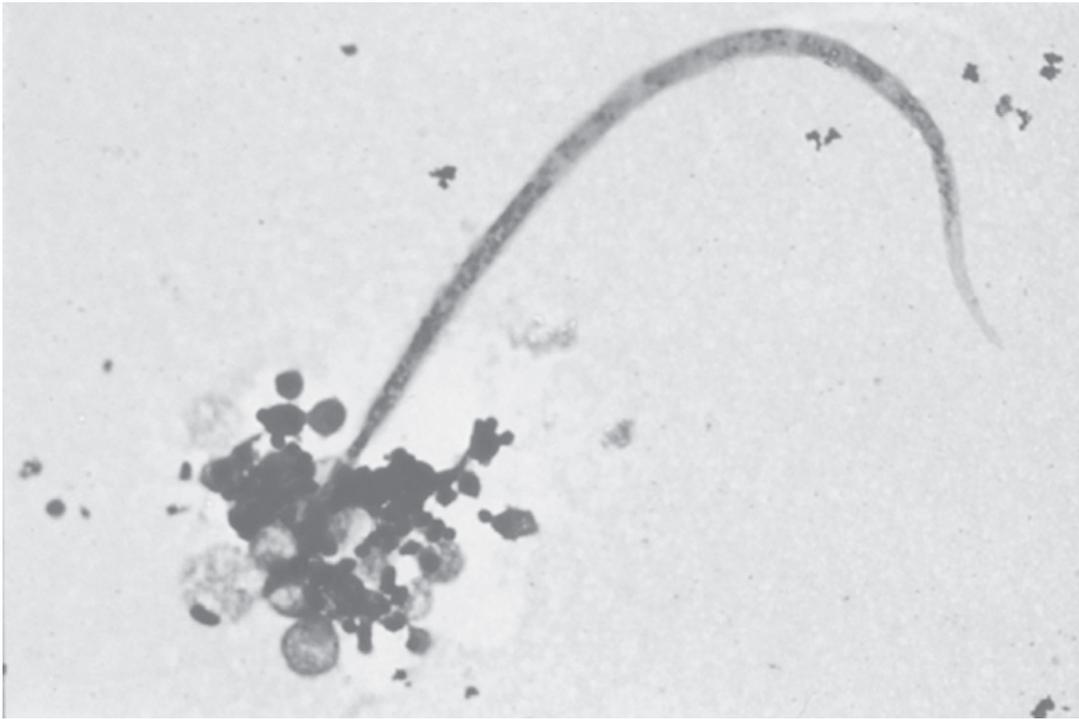


FIG. 3: Foamy histiocytes aggregating around the cephalic end of the microfilaria. Giemsa x 60

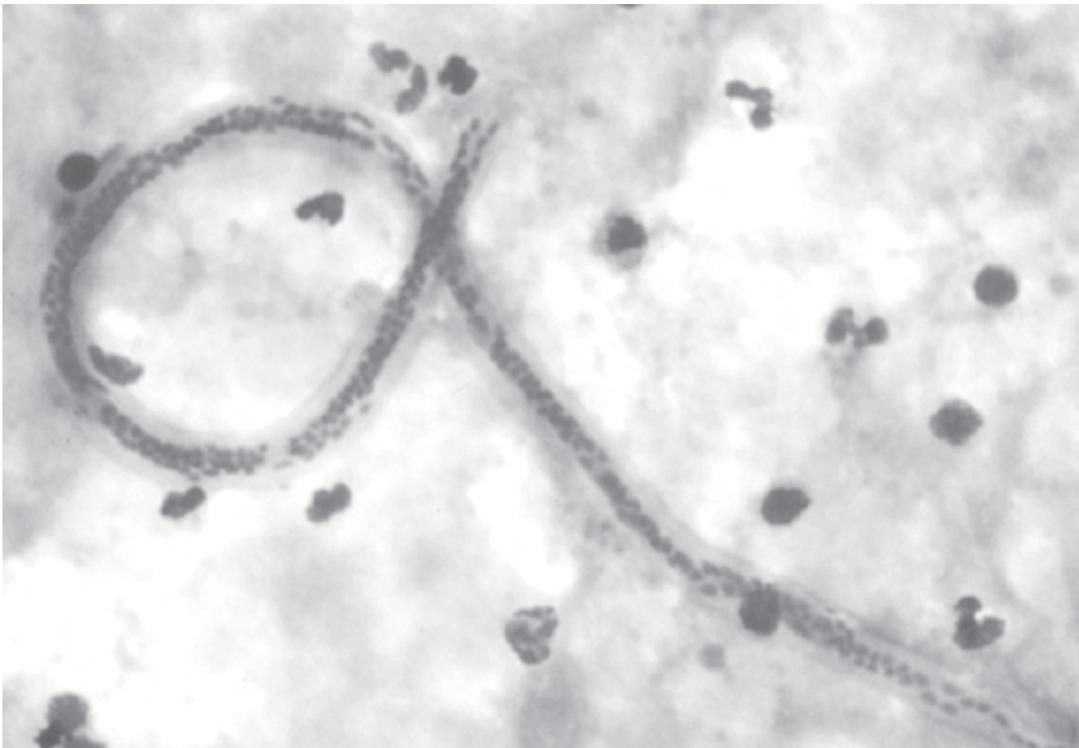


FIG. 4: Microfilaria in thick blood smear. Giemsa x 120

scant numbers. Knott's concentration technique was also positive. The ICT test on serum of the patient detected the presence of antigens for *Wb*. Histological sections of the tunica vaginalis showed fibrovascular tissue with no microfilaria identified.

## DISCUSSION

Filariasis is endemic in Asia and an estimated 100 million people throughout the tropics and subtropics are thought to be infected by bancroftian filariasis.<sup>9</sup> About 40 million people in endemic regions suffer from chronic disfiguring lymphatic filariasis, including 27 million men with testicular hydrocele, lymph scrotum or elephantiasis of the scrotum.<sup>10</sup> Acute lymphangitis of the spermatic cord (funiculitis), epididymitis, orchitis, scrotal oedema and hydrocele are common manifestations of bancroftian filariasis.

Bancroftian filariasis is caused by the nematode *Wuchereria bancrofti*. Living and dead adult worms cause symptoms. Adult worms live in the lymph channels near the major lymph glands of the lower half of the body and cause dilatation of the channels, interfering with lymph flow and resulting in lymphoedema and leakage of lymph into the tissues.<sup>11</sup> The obstructive phase is marked with lymph varices, lymph scrotum, hydrocele, chyluria and elephantiasis with hard, non-pitting edema and thickened, verrucous skin. Microfilariae are not present in these lesions and do not per se cause lymph obstruction. The pathogenesis of lymphatic filariasis is based on inflammatory and immune responses of the host and varies from nongranulomatous chronic lymphatic inflammation to granulomatous obstructive reactions.<sup>11</sup> The cause of lymphatic dilatation with *Wb* is not known although lymphatic dilatation was a universal ultrasonographic finding among adult worm carriers and those with microfilaremia. Ultrasound has now been used in lymphatic filariasis to examine men with asymptomatic adult *Wb* infections who do not respond to treatment with antifilarial medication and to establish the relationship between lymphatic dilatation and the development of scrotal morbidity.<sup>12</sup>

A diagnosis of filariasis is considered when a history of exposure to mosquitoes in an endemic area is reinforced with relevant clinical findings and is clinched by the demonstration of microfilariae in a thick blood smear obtained at night. In Malaysia, the sub-periodic form of *Brugia malayi* (*Bm*) occurs in swamp forests

while the periodic form is endemic in the coastal rice field regions of the country. Although *Wb* has been eradicated, especially from the cities, the vector (*Culex quinquefasciatus*) still breeds in abundance.<sup>13-16</sup> In the present case, the microfilariae were identified in cytological smears of hydrocele fluid and characterized as *Wb* based on presence of a sheath, distinct nuclear bodies that did not reach the caudal end with a cephalic space free of nuclei and positivity for the ICT test. The microfilarial nuclei were visualized better with the Giemsa stain done on the thick blood smear (Figure 4). Serological testing for antibodies to filarial antigen may be of diagnostic value when microfilariae cannot be found in the blood. Two tests are commercially available, the enzyme-linked immunosorbent assay (ELISA) and the other is the rapid-format ICT test that detects the circulating antigens of *Wb*.<sup>17</sup> The first commercially available antigen detection assay for bancroftian filariasis, a monoclonal antibody-based sandwich ELISA that uses the IgM antibody known as Og4C3, has a reported sensitivity that ranges from 73% to 100% and it is useful for field investigations and epidemiological assessments.<sup>18</sup> Polymerase chain reaction-based assays for DNA of *Wb* have greater diagnostic sensitivity but are expensive and time consuming procedures not suitable for routine diagnostic purposes. The standard antiparasitic treatment for lymph filariasis caused by *Wb* and *Bm* is Diethylcarbamazine (DEC). Ivermectin, a macrolide antibiotic, may be particularly useful for the control of lymph filariasis in areas where loiasis or onchocerciasis co-exist and where treatment with DEC is therefore contraindicated.<sup>19</sup> Regimens that utilize single-dose DEC or Ivermectin or combinations of single doses of Albendazole and either DEC or Ivermectin have all been demonstrated to have a sustained microfilaricidal effect.<sup>17</sup> Reports of "resistant" filarial parasites have started to appear.<sup>20</sup>

We believe this to be the first documented case in Malaysia of diagnosis of filariasis by hydrocele fluid cytology. In a recent study done on 809 migrant workers in Malaysia in which 52 cases were screened for bancroftian filariasis, only one sample, obtained from a Myanmar worker, was positive.<sup>21</sup> We would also like to stress the importance of possible changes in the facet of lymphatic filariasis in Malaysia due to the influx of foreign workers and immigrants from neighbouring countries like Indonesia, Philippines, Myanmar, India, Bangladesh and

Pakistan. Defaulting treatment, particularly common in migrant workers, continues to pose a problem in eradicating infections in this country.

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