

# An inguinal mass with local vascular lesions induced by a lymphatic filaria

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## ABSTRACT

A 47-year-old Indian male presented with an inguinal mass clinically suspicious as a tumor. Histological examination of the excised mass demonstrated tissue reaction to degenerating intravascular adult filarial worms. The worms have been identified as a lymphatic filariae, most probably *Wuchereria bancrofti*. The case report underscores the need to maintain suspicion of genitourinary filarial lesions in non-endemic areas and describes atypical vascular lesions induced by lymphatic filariae.

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Lymphatic filariasis is one of the most important infectious diseases in the tropics and subtropics. The disease is caused by filarial worms belonging to 2 genera: *Wuchereria* and *Brugia*. *Wuchereria* has only one species *Wuchereria bancrofti* (*W. bancrofti*) which is highly specific for humans. *Brugia* has several species, some of which infect humans and animals, most prevalent of these are *Brugia malayi* (*B. malayi*) and *Brugia timori* (*B. timori*). Other species are primarily animal parasites and humans get accidentally infected with them. The pathological lesions induced by the lymphatic filariae are mainly located in the lymphatic system, starting as acute adenolymphangitis that might affect the genitalia in bancroftian filariasis, leading to funiculitis, epididymitis and orchitis. After several years some cases develop into the chronic manifestations of the disease due to damage of the lymphatic system and accumulation of lymphatic fluid leading to elephantiasis, lymphoscrotum and hydrocoele.

The lymphatic filariae have occasionally been reported in blood vessels where they have lead to atypical lesions. An adult *W. bancrofti* has been reported in a branch of the pulmonary artery causing

an infarct-like lesion of the lung.<sup>1</sup> A living *B. malayi* like adult worm was also identified in a branch of the pulmonary artery where it has been associated with endarteritis leading to infarction.<sup>2</sup> In the present report we are describing a case in which a lymphatic filarial worm, most probably *W. bancrofti*, was located mainly inside the venous blood vessels leading to atypical vascular lesions and presenting as an inguinal mass.

**Case Report.** A 47-year-old Indian man, from Northern India presented to a private clinic in Riyadh, Kingdom of Saudi Arabia with a touchy but not painful lump in the right groin measuring exteriorly 5 x 7 cm. He reported the lump as slowly growing over the last 18 month. Clinically, there was no evidence of lymphangitis, elephantiasis or hydrocoele and movement of lower extremity was well preserved. Intraoperatively, the surgeon reported a mass located within the spermatic cord, near the internal inguinal ring measuring 3.5 x 3.5 cm and surrounding the ductus deference. The removed mass was described as "thrombotic venous plexus surrounding spermatic cord" and submitted

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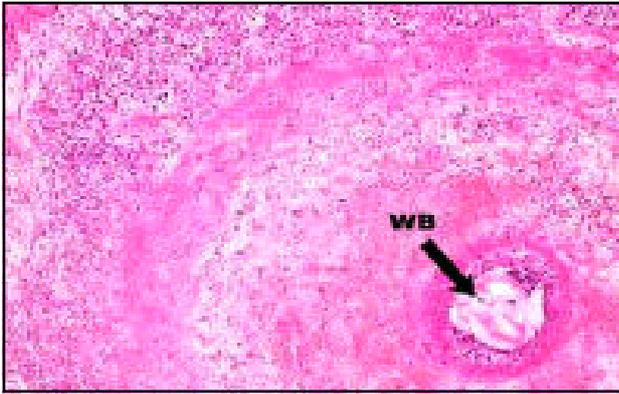


Figure 1 - Transverse section of a degenerating adult male *Wuchereria bancrofti* (WB) surrounded by a thrombus obstructing a large venous vessel. A transmural inflammatory infiltrate is also obvious. Hematoxylin and Eosin stained x 200.

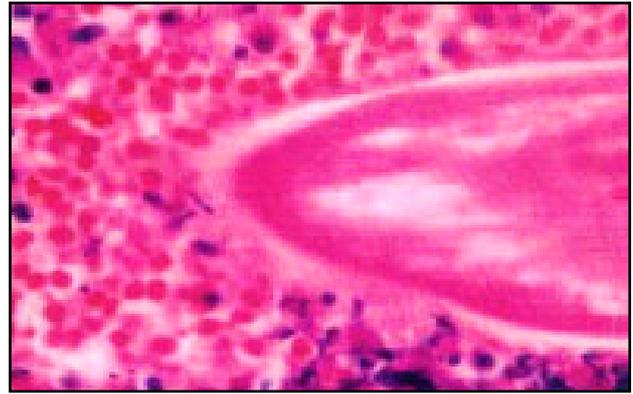


Figure 3 - Longitudinal section of the worm. Note the fine striations on the cuticle. Hematoxylin and Eosin stained x 500.

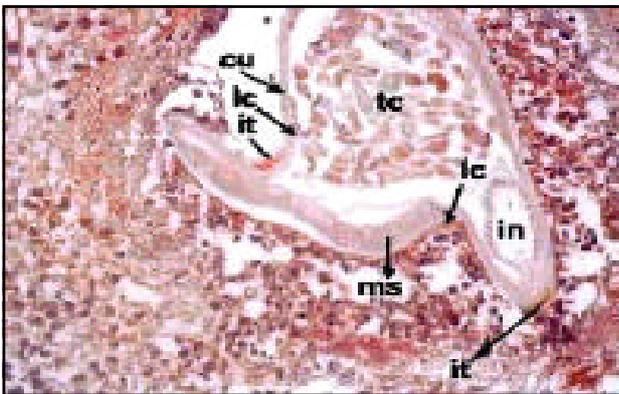


Figure 2 - A slightly oblique section of an adult male worm. Note the thin cuticle (cu), internal thickenings (it), lateral cords (lc), intestine (in), testis (te) and muscles (ms). Hematoxylin and Eosin stained x 1000.

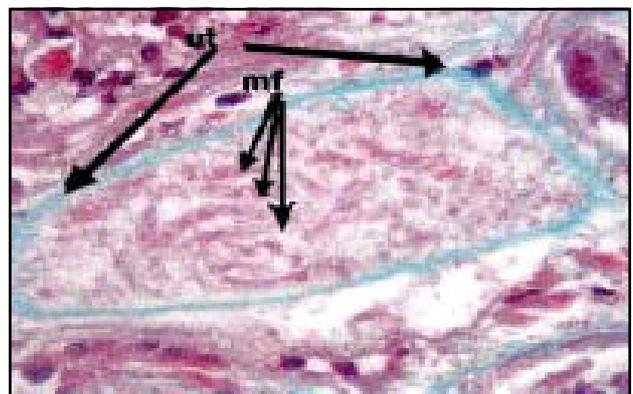


Figure 4 - Section showing severely degenerated adult female with remnants of uterus (ut), containing microfilariae (mf). Trichrome Masson x 1000.

for histopathological evaluation. There were no remarkable laboratory findings, in particular, the patient did not reveal any peripheral blood eosinophilia. The recovery after surgery was uneventful.

**Pathologic findings.** On gross examination the tissue was elongated in shape, soft, brownish, friable measuring 3.0 x 3.2 cm and the cut surface showed hemorrhages and thrombosed, dilated blood vessels.

Microscopically, specimen disclosed numerous thrombosed veins surrounded by massive inflammatory, reactive infiltrate, consisting of macrophages, lymphoid cell lineage, to plasma cells and eosinophils. In addition, almost every blood vessel, arterial or venous, presented conspicuous vasculitis in a form of a transmural lymphoid and eosinophilic infiltrate. There was no evidence of granulomatous tissue reaction around the vessels as well as no evidence of granuloma formation.

**The parasite.** Serial paraffin sections, 7  $\mu$  thick, were prepared and stained with hematoxylin and eosin (HE), para aminosalicylate (PAS) and trichrome stains. Several transverse, oblique and longitudinal sections of a slightly degenerated adult nematode were found mostly within venous blood vessels, surrounded by intraluminal thrombus (Figure 1). Post-mortem changes in the worms rendered identification more difficult.

The diameter of the worm was measured in a transverse sections with a maximum diameter of 145  $\mu$ . The cuticle was thin measuring approximately 1  $\mu$ m or less except for a thick ridge evident in trichrome-stained sections as a red ridge (internal thickening) of approximately 3  $\mu$ m thick over the lateral cords (Figure 2). The cuticle also showed fine striations demonstrated in a longitudinal section (Figure 3). Muscles cells could not be counted in HE stained sections but in trichrome-stained sections, a small number of cells

could be identified, not more than 4 in each quadrant.

The intestine had a maximum diameter of 32  $\mu$ . It showed some degeneration in most sections, epithelial cell outlines could not be distinguished in any of the sections. At one spot with remnants of a uterus, microfilariae could be seen within remains of a severely degenerated worm (**Figure 4**).

**DISCUSSION.** The intravascular location of the worms in this case was curious. The differential diagnosis of intravascular nematodes includes *Dirofilaria*<sup>3</sup> and *Angiostrongylus costaricensis*, both of which are known for their intravascular affinity and has been reported in testicular lesions<sup>4,5</sup> and in the scrotum.<sup>6</sup> However, although the tissue eosinophilia and vascular changes are similar to those induced by *Angiostrongylus*, the morphological features in the worm sections were more consistent with those of a lymphatic filaria.

The 2 common lymphatic filariae are similar in histological sections but could be distinguished by size and the thickness of the cuticle.<sup>7-10</sup> The mean maximum diameter of female *W. bancrofti* is 250  $\mu$ , the male is 150  $\mu$  whereas the diameter of female *B. malayi* is 160  $\mu$ , the male is 90  $\mu$ . The cuticle of *W. bancrofti* has fine transverse striations and is thin except over the lateral cords where it expands inwards forming a low ridge. Muscles of *Wuchereria* are few, not more than 3-4 muscle cells per quadrant. The lateral cords are wide and occupy 40% of the circumference. The size and morphological features seen in the sections are consistent with those of *W. bancrofti*.

Genitourinary filariasis is a well known entity in areas in which lymphatic filariasis is endemic. However, the present case is a reminder that even in areas where the disease is not endemic, filariasis should be suspected in patients coming from endemic areas and should be in the differential diagnosis of testicular, epididymal or spermatic cord masses. Fine needle aspiration has been reported as successful in diagnosis of some cases.<sup>11-13</sup> Another point of interest in the present case is the atypical or unusual intravascular location of the worm and the blood vascular lesions induced by the worm.

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