

Can We See Microfilaria On Ultrasound?: A Real-Time Ultrasound And Wet Smear Demonstration Of Dancing Microfilaria

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Citation

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Abstract

A case with the filaria dance sign (FDS) in the epididymal region is described. Aspiration of fluid from an epididymal cystic lesion demonstrated motile microfilaria. We explore the possibility that the "dancing particles" described by the FDS are microfilaria and not the adult worm as previously described.

INTRODUCTION

Man is the definitive host of filaria. The adult filarial worm resides in scrotal lymphatics. The female adult worm can release upto 50,000 microfilaria, the larval form, in one day. Imaging techniques can detect the presence of the adult worm and different features have been described on plain radiography (₁), CT, lymphangiography (_{2,3}), ultrasound (₄), lymphoscintigraphy and MRI (₅). Amongst these imaging modalities, ultrasound has proved to be the most widely used method for demonstrating the adult filarial worm. The term FDS (filaria dance sign) is an ultrasound finding in filariasis that was first described by Amaral et al (₄). We report a case in which the real-time US and real-time wet smear video-microscopy suggest that the dancing forms of the FDS are in fact microfilaria and not the adult worm. In this Internet report, we utilize the versatility of multimedia to visually demonstrate the close similarity between the in vivo and in vitro movements of microfilaria.

CASE REPORT

A 35-year-old man presented with right-sided scrotal pain. Clinically, the right epididymis was thickened. High resolution ultrasound (10MHz) examination showed four cystic spaces in the right epididymal region and one in the left epididymal region measuring 2 mm to 8 mm with multiple small (<1mm) objects exhibiting peculiar random movements as described by the FDS. Colour and spectral Doppler examination of the cystic lesions did not show any evidence of arterial or venous flow. There was turbulence

secondary to the random movements of the particles. A small hydrocoele was seen on the right side.

Video Clip 1 - Real time Ultrasound (10MHz) showing nest with "dancing" echogenic particles

Ultrasound guided aspiration of one of the cystic lesions yielded turbid viscous fluid. There was significant reduction in the number of particles on ultrasound following aspiration. Immediate microscopic examination of the wet smear showed motile microfilaria. On May-Grunwald-Giemsa stain, these were confirmed to be microfilaria of *Wuchereria bancrofti*.

Video Clip - Video-microscopy of the aspirate showing "dancing" microfilaria of *Wuchereria bancrofti* (MGG 400X).

DISCUSSION

The term FDS (filaria dance sign) is used to describe the random aleatory motion of echogenic particles seen in lymphatic spaces in the scrotal area in patients with filariasis. These curious movements in the epididymal region were first described by Amaral et al (₄). They demonstrated live adult filarial worms on surgical resection of a dilated lymphatic. Microfilaria were not demonstrated in the specimen. Since then, researchers have considered these dancing particles to be the adult filarial worms (_{6,7,8}).

We feel that these small dancing particles are microfilaria and not the adult worms in view of their size (<1 mm) and

their location within minute lymphatic spaces (2 mm). Adult male filarial worms measure 10 mm to 40 mm in length and adult female worms measure 40 mm to 100 mm. The length of the microfilaria is 250 microns (0.25mm). In addition, there was no structural continuity or coordinated movement between the particles.

To support this hypothesis, aspiration of one of the dilated lymphatics exhibiting the FDS yielded microfilaria. There was a remarkable similarity in the movements of the microfilaria on wet smear microscopy and US. Microfilaria of *Wuchereria bancrofti* are known to move in graceful sweeping curves (9).

Because of their small size, microfilaria are theoretically beyond the resolution of high frequency US transducers. In these cases, however, they were probably rendered visible by their rapid movements within an ideal acoustic medium. Furthermore, part of their reflectivity may be due to turbulence within the surrounding fluid created by their movements.

In conclusion, despite their small size, microfilaria are eminently demonstrable on ultrasound examination and when aleatory movements are seen in scrotal lymphatics, the term "Microfilarial dance sign (MDS)" instead of "Filarial dance sign (FDS)" should be used. In individuals "amicrofilaremic" on peripheral blood smear, but likely to be infected by filaria, ultrasound can be used as another tool in the detection of microfilaria in the body.

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