An unexpected peripheral blood finding: microfilaria

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ABSTRACT

Microfilaria are not parasites native to the continental United States. On a routine peripheral blood smear examination from an emergency room patient, a microfilaria was identified. The patient was a native African currently living in Texas. With the ability of worldwide travel and the presence of immigrant populations, unusual and/or unexpected findings might be anticipated.

KEYWORDS *Mansonella perstans*; microfilaria

CASE DESCRIPTION

A 68-year-old woman presented to the emergency department with an irregular and rapid heartbeat. She had a history of mild hypertension with a blood pressure reading of 155/95 mm Hg. An electrocardiogram revealed atrial fibrillation. Radiologic studies revealed mild cardiomegaly. Her metabolic profile was within normal limits, with a glucose of 87 mg/dL; sodium, 141 mEq/dL; potassium, 3.8 mEq/dL; chloride, 105 mEq/dL; calcium, 9.6 mg/dL; and blood urea nitrogen, 16 mg/dL. Her complete blood count results appear in [Table 1](#). A peripheral smear was examined because of the mild eosinophilia, and a microfilaria was found in the patient's blood film, which was identified as *Mansonella perstans* ([Figure 1](#)).

DISCUSSION

Filariasis is an infectious parasitic disease caused by roundworms that belong to the family *Filarioidea*.¹ These are spread by bloodfeeding insects such as black flies and mosquitoes. Eight known filarial nematodes use humans as their definitive hosts.^{2,3} Filariasis is divided into three major groups based on the primary sites affected: lymphatic, subcutaneous, and serous cavity. Some individuals have no symptoms, whereas others have episodes of high fevers, shaking chills, body aches, blindness, swollen lymph nodes, and lymphatic filariasis (elephantiasis) depending on the species of microfilaria.

The roundworm in our patient was *Mansonella perstans*, one of the three filarial species in the genus *Mansonella* (the other two being *M. ozzardi* and *M. streptocerca*), which are included in the category of serous cavity filariasis. In

mammalian hosts, adult *Mansonella* worms are located in connective tissues or peritoneal, pleural, or pericardial cavities.⁴ Microfilaria of *M. perstans* will circulate in the blood and are approximately 190 to 200 μm in length $\times$ 4 μm (slightly smaller than the diameter of a red blood cell). The microfilariae are unsheathed; the tail tapers to a bluntly rounded end and nuclei extend to the end of the tail.⁵ Because the microfilariae are small, they can be overlooked in blood films. In the blood, they may be distinguished from other sympatric microfilariae including *Loa loa* or *Wuchereria bancrofti*, which are longer and sheathed and have larger terminal nuclei.⁵

Many patients are reported to be asymptomatic, with eosinophilia as a common feature, as in our patient. *M. perstans* is considered the most frequent filariasis in Africa.⁴ It is found mostly in the wet and subtropical and tropical areas of Africa from Senegal to Zimbabwe. Despite accumulating evidence of a high prevalence in endemic areas, currently there is no filariasis control program targeting mansonellosis. Simonsen et al⁶ estimated that more than 100 million people are infected in Africa. Our patient was originally from Senegal and last visited there about 2 years earlier. She could not recall any particular insect bites (midges are associated with *M. perstans* transmission), but insect bites in Africa are common.

Anthelmintic drugs have a limited efficacy against *M. perstans*. One study showed some promise with prolonged (6-week) doxycycline treatment.⁷ Our patient was successfully treated for her atrial fibrillation, which was considered to be independent of the microfilarial infection. She was also considered to have no signs or symptoms of the microfilarial

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Table 1. Complete blood count results

Test	Result
White blood cells ($\times 10^3/\mu\text{L}$)	10.2
Red blood cells ($\times 10^6/\mu\text{L}$)	4.28
Hemoglobin (g/dL)	12.8
Hematocrit (%)	36.9
Mean corpuscular volume (fL)	86.0
Mean corpuscular hemoglobin (pg)	29.9
Mean corpuscular hemoglobin concentration (g/dL)	34.7
Platelets ($\times 10^3/\mu\text{L}$)	242
White blood cell differential	
Neutrophils (% , $\times 10^3/\mu\text{L}$)	55.0% (5.6)
Lymphocytes (% , $\times 10^3/\mu\text{L}$)	19.5% (1.9)
Monocytes (% , $\times 10^3/\mu\text{L}$)	9.5% (0.9)
Eosinophils (% , $\times 10^3/\mu\text{L}$)	15.0% (1.5)
Basophils (% , $\times 10^3/\mu\text{L}$)	0% (0)

infection except for a mild eosinophilia. She was advised to follow-up with a cardiologist as well as an infectious disease physician for consultation and treatment. Unfortunately, this patient was lost to follow-up.

With worldwide travelers and immigrants able to appear in any emergency room or health care facility, we must be prepared to encounter unusual findings and diseases. Certainly, we were not expecting a microfilarial infection in our facility, but an astute medical technologist detected this parasite on a routine peripheral blood smear.

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Figure 1. Peripheral blood smear showing the microfilaria *Mansonella perstans*. Hematoxylin and eosin 400 $\times$.

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