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Peripheral Blood Smear Contamination with *Helicosporium* Fungi Resembling Microfilaria

Kui-Hyun Yoon, M.D.

Department of Laboratory Medicine, Wonkwang University Sanbon Hospital, Gunpo, Korea

On May 27, 2013, an 81-yr-old man visited Wonkwang University Sanbon Hospital with chief complaints of fever, chills, and myalgia lasting for 1 month. The patient had a 5-yr history of intermittent pitting edema of both legs. A diagnosis of cholangitis was made on the basis of right upper quadrant tenderness of the abdomen and computerized tomography (CT) findings. CT showed common bile duct dilatation with a few stones and mild wall thickening. A peripheral blood smear showed the presence of microfilaria-like structures (Fig.1); however, it was not clear whether microfilariae or some other organism. These microorganisms were much smaller than microfilariae (1-2 μm×62-72 μm) and internal structures such as terminal and subterminal nuclei were absent. Routine hematological and biochemical analyses were within normal limits (e.g., bilirubin, AST, and ALT), excluding alkaline phosphatase (529 IU/L), γ–glutamyl transferase (357 IU/L), erythrocyte sedimentation rate (86 mm/hr), and C–reactive protein (115 mg/L). The patient had been living in Gunpo, Korea and never lived in an endemic area, but he had occasionally traveled to China, Taiwan, Hawaii, and Europe in the 20 yr preceding diagnosis. The patient was treated with albendazole and doxycycline because the physician suspected lymphatic filariasis (LF) because of the presence of microfilaria-like organisms on the initial peripheral blood smear and edema of both legs. The patient's symptoms improved after conservative treatment. Microfilaria-like structures were not present on peripheral blood smears performed the following night and on subsequent days. We did not examine antifilarial IgG4.

In the past, the Republic of Korea had been an endemic area for LF caused by *Brugia malayi* [1]. Filariasis is a group of infectious diseases caused by vector-borne nematodes. *Ochlerotatus* (formerly *Aedes*), *Anopheles*, and *Culex* mosquito species are the primary vectors [1, 2]. Because of mass chemotherapy with diethylcarbamazine, as well as improved personal hygiene and general social conditions, the incidence of LF has fallen dramatically since the 1970s [3]. After completing an epidemiologic survey from 2002-2006, Cheun *et al*. [4] reported that LF had been eliminated in Korea. However, in a survey of mosquitoes in the southern islands of Korea, Cheun *et al*. [2] reported a high prevalence of vector mosquitoes, which may constitute a potential risk for reemerging of Brugian filariasis.

LF diagnosis is based on identification of microfilariae on peripheral blood smears. *Helicosporium* is a fungal spore that, incidentally, contaminates fresh smear samples or staining solutions, which may be erroneously identified as a microfilaria [5-8] or a novel parasite [9, 10]. *Helicosporium* was initially reported as a new nematode species, *Sergentella spiroides* [9, 10]. These spores are less than 100 μm in length and vary from 1-2 μm in thickness. Characteristically these organisms form approximately 1.5-2 coils. The inner structure contains areas of darkly stained and unstained material. Little definite organization can

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Corresponding author: Kui-Hyun Yoon
Department of Laboratory Medicine, Wonkwang University Sanbon Hospital, 321 Sanbon-ro, Gunpo 435-040, Korea
Tel: +82-31-390-2658, Fax: +82-31-391-2085
E-mail: wooju67@paran.com

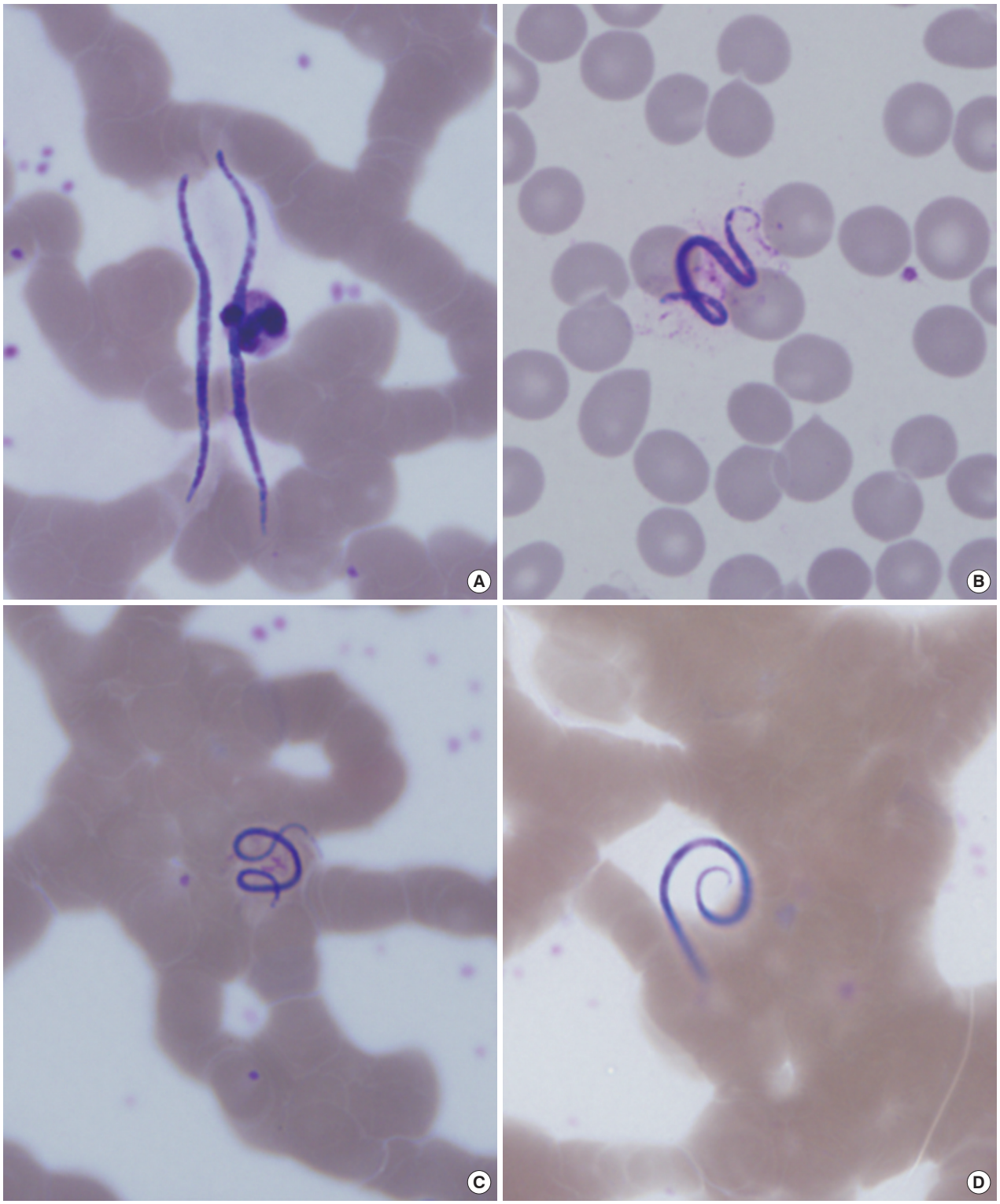

Fig. 1. Peripheral blood smears showing *Helicosporium* spores on the same slide (Wright stain, ×1,000). These organisms show thread-like structures resembling microfilaria (A), irregular helical structures (B and C), and coiled form (D).

be seen internally. Microfilaria differs from *Helicosporium* by being larger in size (3-10 μm×163-315 μm) [6, 7]. Size alone would preclude these organisms from being microfilariae. We should be aware of the possibility of *Helicosporium* contamina-

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tion and its identifying characteristics.

Authors' Disclosures of Potential Conflicts of Interest

No potential conflicts of interest relevant to this article were reported.

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