A Woman with Knee Pain and Soft-Tissue Calcification

(See pages 750–1 for the Photo Quiz)

Figure 1. Anterioposterior radiograph of the distal femur near the knee joint showing a calcified Dracunculus medinensis lesion within the soft tissues. The calcification has a serpentine appearance.

Diagnosis: calcified Dracunculus medinensis in the subcutaneous tissue.

The patient reported a history of having had a thread-like worm at 10–12 years of age (i.e., 50 years before presentation). At that time, she was a resident of Najran, Saudi Arabia, and recalled experiencing intense itching in the lower limbs, followed by the emergence of a small worm that her family removed by wrapping it around a stick. Since then, she had experienced no associated problems.

Radiographs of the patient’s knees revealed guinea worm calcifications. Serpentine soft-tissue calcification is seen within the distal aspect of the right thigh and around the left knee (figure 1). The calcification appears nodular, beaded, and fragmented because of the breaking up of the worm (figure 2). The characteristic appearance, combined with the patient’s background, led to a diagnosis of infection due to D. medinensis (guinea-worm), a nematode parasite that causes dracunculiasis.

After the death of an adult worm, D. medinensis may undergo calcification in several forms, especially if it was not fertilized or did not release its larvae. In its typical location in the lower extremities, the female D. medinensis appears as a long, string-like, serpiginous or curvilinear calcification, which may extend to 1 meter in length [1].

A description of D. medinensis infection was given by Ar-Razi Al Hawi several hundred years ago [2]. The disease is a debilitating and painful infection that begins with a blister, usually on the leg, followed by itching, fever, swelling, and burning sensations. Once the infected person immerses the infected part in open water, the worms emerge and release thousands of larvae into the water. The larva is then ingested by a water flea (cyclops), where it develops and becomes infective. Humans acquire infection by drinking water contaminated with cyclops. The D. medinensis larva then penetrates the gut wall and migrates through the subcutaneous tissue,
Figure 2. Radiograph of the left knee revealing serpentine soft-tissue calcification that is visible posterior and lateral to the distal femur near the knee joint.

forming a blister after ~1 year. The mature worm then emerges into flowing water, thus repeating the life cycle.

Humans are the only known reservoir for guinea-worm disease. According to the World Health Organization, approximately two-thirds of the cases reported in 1999 (~66,000 cases) were from Sudan [3]. D. medinensis disease disappeared from many countries, including Saudi Arabia, because of improvements in water supply [3]. Many years ago, the main water supplies were wells. Given that millions of pilgrims travel to Saudi Arabia for annual Hajj, the presence of D. medinensis was predictable. However, since the early 1970s, D. medinensis infection has virtually disappeared from Saudi Arabia [4]. The reason for this is that, in most cities and towns, waterholes were replaced by cemented wells, with the formation of a substantial cement curb around each well to prevent water from leaking back into the well after being drawn [4]. Later, the introduction of modern water supply systems and the provision of safe drinking water in rural and isolated areas were important interventions that helped to eliminate the disease in Saudi Arabia.

The diagnosis of D. medinensis disease can be established on clinical grounds. Therapy relies on slow extraction of the worm. It has been suggested that the rod of Asclepius—the medical symbol with a serpent entwined around a rod—derives from this ancient treatment [5]. The medications metronidazole, thiabendazole, and mebendazole have been used for treatment, with no effect on pre-emerging worms or larvae [6, 7].

Acknowledgments

I acknowledge the use of Saudi Aramco Medical Services Organization facilities in obtaining the research data used in this manuscript. Opinions expressed in the article are those of the author and not necessarily of SAMSO.

Potential conflicts of interest. J.A.A.-T: no conflicts.

Jaffar A. Al-Tawfiq

Internal Medicine Services Division, Dhahran Health Center, Saudi Aramco Medical Services Organization, Saudi Aramco, Dhahran, Saudi Arabia

References