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Expert Comment / Uzman Yorumu

Cardiac echinococcosis: A rare but challenging surgical entity

Kardiyak ekinokokkoz: Nadir fakat zorlu bir cerrahi konu

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In this issue of Turk Gogus Kalp Dama; Erdoğan et al.[1] and Tascanov et al.[2] present cases with cardiac echinococcosis from two different centers, Ankara and Elazığ with sufficient detail. These cases provide valuable insights into this rare, but challenging surgical entity.

Human echinococcal disease, echinococcosis, also called hydatid disease (HD) is a zoonotic public health issue caused by tapeworms of the *Echinococcus* spp. *(E.granulosus, E.multilocularis, E.vogeli, or E.oligarthrus)* presented in the form of the cystic or alveolar disease. Carnivores act as definitive hosts for the parasite and harbor the mature tapeworm in their intestine. Sheep and humans are intermediate hosts through the ingestion of the parasite eggs in water or soil, and contaminated food, or after direct contact with animal hosts through the fecal-oral route.[3] Enteric pathogen embryos can be transmitted and may penetrate the intestinal mucosa and enter the human portal venous circulation. However, direct transmission from human-to-human does not occur.[3] After an asymptomatic incubation period HD may grow to an extent which induces clinical signs. Hydatid disease is usually located in the liver and the lung. Cardiac HD has been described for 0.5 to 2% of all echinococcosis cases and is usually univesicular,[3] but rarely multiple.[2] Parasitic larvae reach the heart through coronary circulation.[4] Cardiac HD may be located in the intramyocardial, intracavitary, pericardial, or paracardial regions.[5] Given the ease of global traveling, refugee migration and an increase in the number of immunocompromised patients, HD can be found anywhere in the world.

Second, the diverse presentations of cardiac echinococcosis range from dyspnea[1] and angina through arrhythmias,[1] syncope, and conduction disturbances to myocardial infarction, heart failure, anaphylaxis, cardiac tamponade, pulmonary hypertension, pericarditis, fatigue,[2] and sudden cardiac death depending on location, size, and integrity of the cardiac cyst.[5] Cardiac HD should be part of the differential diagnosis in virtually any patient presenting with a cardiac mass.

Third, echocardiography is the most appropriate imaging tool to evaluate potential myocardial or pericardial HD and pericardial effusion. Computed tomography and magnetic resonance imaging are complementary imaging modalities to demonstrate specific signs, including the presence of daughter cysts, the calcification of the cysts' walls, and membrane detachment. Eosinophilia, Casoni intradermal and indirect hemagglutination tests are also only complementary with a low diagnostic value.[1] However, the enzyme-linked immunosorbent assay is one of the most specific serological tests.

Cyst perforation is the most feared complication of cardiac HD. Currently, the gold standard treatment of cardiac HD is surgery (partial or total cystectomy) and adjuvant chemotherapy (prolonged anti-helminthic prophylaxis with albendazole 10-15 mg/kg/day started at least 4 to 7 days before surgery and be continued for at least three to six months). During surgery, following aspiration of cystic contents, 3% hypertonic saline or 1% iodine can be used for deactivation of residual scolices and, then, germinative membrane should be removed.

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The residual cavity can be plicated with a continuous suture (capitonnage). Surgery is recommended even in asymptomatic patients to avoid lethal complications including cyst rupture, anaphylactic shock, tamponade, pulmonary, intracerebral or arterial embolism, acute coronary syndrome, arrhythmias, and infection.[5] Cardiopulmonary bypass provides controlled puncture and aspiration of the cyst contents and excision of the cyst with closure of the cavity.[5] Minimally invasive techniques through left anterior mini-thoracotomy has been recently reported.[6] According to the World Health Organization, surgery is not recommended for pregnant women, those with multiple or difficult-to-access cysts, or patients with dead or calcified cysts. Asymptomatic cysts, if heavily calcified and presumed nonviable, may be monitored without specific therapy. Close long-term follow-up is mandatory for potential recurrence with the available imaging modalities and serology.

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