G84 A Diagnosis of Chagas Disease at Autopsy

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The goal of this presentation is to become familiar with Chagas disease and to consider it as a diagnosis in the setting of chronic myocarditis and sudden death

The forensic community will be presented with an interesting case of chronic myocarditis related to Chagas disease, raising awareness of the presence of this disease in the United States, and its relation to sudden death.

Chagas disease is caused by the parasite *Trypanosoma cruzi*, which is a blood-dwelling and tissue-dwelling protozoan. The disease occurs in the Americas, primarily in Central and South America. It is transmitted to humans through the bite of the reduviid bug. The disease is commonly seen in children younger than five years who develop a skin lesion known as a chagoma at the site of infection where the organisms proliferate in the skin. The trypomastigotes (flagellate forms) may then spread via hematogenous or lymphatic routes and cause an acute illness characterized by lymphadenopathy, fever, anorexia, and fatigue. After the acute phase, recovery may occur, or the disease may progress into a chronic phase, which is usually seen in adults and older children. Chronic carriers of *Trypanosoma cruzi* may develop chronic myocarditis and a cardiomyopathy or dilatation of the digestive tract, characterized by dysphagia and megacolon.

Chagas disease is diagnosed at autopsy in a 66-year-old Hispanic male originally from El Salvador who died in Houston while at work in the construction of a residential apartment complex. He was found dead by his employer who had arrived at the job site to supervise him. He was found on the floor inside of an apartment that was being renovated, and it appeared he had collapsed as he was preparing to perform some caulking. Per his family, he had no known medical or social history but had been complaining of dizziness and palpitations over the past two weeks. At autopsy, he had an enlarged, 515-gram heart with left ventricular hypertrophy and focal thinning of the left ventricular wall toward the apex. A 1.5-centimeter mural thrombus was in the apex of the left ventricle, and the surrounding myocardium had diffuse scarring. Extensive myocardial fibrosis extended into the lateral and posterior left ventricle towards the base of the heart. The coronary arteries showed mild atherosclerosis with 10% to 20% stenosis in the left anterior descending and right coronary arteries. He also had remote embolic infarcts in the kidneys and brain with 9-centimeter and 3-centimeter cortical scars in the kidneys and a 2-centimeter area of cortical encephalomalacia in the left occipital lobe. Microscopically, sections of the heart showed chronic interstitial inflammation with lymphocytes and eosinophils associated with patches of mycoardial fibrosis. Toxicology was negative for drugs and alcohol. Chagas disease was considered in the differential diagnosis of chronic myocarditis in an adult male from Central America; therefore, serologic testing was requested through the Centers for Disease Control. An indirect fluorescent assay showed an IgG antibody titer of 1:512, which was positive for Chagas disease.

There are many different causes of myocarditis including infections, immune reactions, drug hypersensitivity, poststreptococcal, giant cell myocarditis, and sarcoidosis. Common infectious causes are typically viral such as coxsackieviruses, echoviruses, influenza, and adenovirus. Additionally, other protozoa such as toxoplasma and helminths can also affect the heart and cause myocarditis. Although typically prevalent in South and Central America, Chagas disease should be considered in individuals in the United States who present with cardiac arrhythmias, congestive heart failure, and sudden death, especially in Texas, California, and throughout the South given the large immigrant population in these states. *Trypanosoma cruzi* can also be transmitted through blood transfusions, organ transplantation, transplacentally, and through breast milk. In 2006, the FDA approved a screening test for Chagas disease in the blood donation population, which is currently being used for screening the donated blood in the Gulf Coast region of Texas.

Chagas Disease, Chronic Myocarditis, Autopsy

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