G83 Sudden Death Due to a Cardiac Sarcoidosis: Histopathological Helping Evidences

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The goal of this presentation is to present an uncommon case of sudden cardiac death in a 34-year-old. A complete methodological forensic approach by means of autopsy, histological, and immunohistochemical examinations led us to conclusion of a systemic sarcoidosis with massive cardiac involvement.

This presentation will impact the forensic science community by demonstrating how the rarity of cardiac sarcoidosis makes the case peculiar; in addition to clinical and lab tests, a complete forensic methodological approach by means of autopsy, histopathological examination and immuno- histochemical stain led us to confirm the diagnosis of cardiac sarcoidosis as the cause of death.

Sarcoidosis is a multisystem disorder of unknown aetiology, character- ized by noncaseating epithelioid cell granulomas. The aetiology and pathogenesis are unclear, although many infectious, environmental and genetic factors have been implicated. Prognosis and clinical manifestations are dependent on the location and extend of granulomatous infiltrates. The cardiac involvement is uncommon (at autopsy, cardiac involvement has been reported in 20-30% of patients with sarcoidosis, although most studies indicate that <5% of patients with sarcoidosis have symptoms related to car- diac involvement) and has a wide range of clinical manifestations (conduction disorder, ventricular arrhythmias, atrial arrhythmias, pericarditis, valvular dysfunction, congestive heart failure). It is unusual for sarcoidosis to present with isolated cardiac involvement. In autopsy study, cardiac nvolvement proved to be the cause of death in 37% of the patients with sarcoidosis. Cardiac involvement associated with poorer prognosis and the mortality rate may exceed 40% at 5 years and 55% within 10 years. The presence of pulmonary involvement was associated with better survival. Sudden death due ventricular tachyarrhythmia or conduction block accounts for 25 to 65% of the deaths due to cardiac sarcoidosis.

A 34-year-old woman was found lifeless at home from by her parents. Death scene investigation was unremarkable. The extended family hadn't a history of sudden death. In her history a visit to the Emergency Room three months before death was recorded. She complained chest pain, non – sustained ventricular tachycardia and loss of consciousness. Body temper- ature was normal. Subsequent cardiological evaluation with ECG showed sinusal rhythm with ventricular premature beat and intraventricular conduction abnormalities. Echocardiography showed normal chamber di- mensions, no wall motion abnormalities. The research for viruses was negative. The laboratory findings were normal. During hospitalization she presented some episodes of supraventricular paroxysmal tachycardia (160 bpm) and non – sustained ventricular tachycardia. No others symptoms or apparatus failure were present. Family history was reportedly negative for cardiac disease. An anti – arrhythmic treatment was prescribed.

A complete postmortem examination was performed two days after death. External examination was unremarkable. The internal examination revealed only a polivisceral congestion and pulmonary edema. All internal organs were macroscopically normal. The heart had a normal shape and was normal in size and weight. The left and right coronary arteries arose normally. No significant stenosis or thrombotic occlusion of the coronary segment were detected. The atrio – ventricular and semilunar valves were normal. The myocardium showed an extensive fibrotic scarring, particu- larly in the supero – anterior wall of the LV and the posteroseptal wall. The histological examination of the heart, performed with routine haematoxylin- eosin revealed diffuse and extensive fibrosis with non-caseating granulomas composed mainly of an aggregate of epithelioid cells and multinucleated giant cells in the centre surrounded by lymphocytes, plasmacells and mastcells. The lungs and kidneys also showed the same non caseating granulomas. An immunohistochemical examination of heart samples was performed to confirm diagnosis. Mycobacterium tuberculosis and fungal infections were excluded on special stains. The remainder of the histological examination was unremarkable. The diagnosis of sarcoidosis with massive and extensive cardiac involvement was established as cause of death.

Cardiac Sarcoidosis, Sudden Death, Ventricular Arrhythmias

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