H12 Sudden Death: The Role of Histopathological Investigations in a Case of Eosinophilic Myocarditis (EM)

Isabella Aquila, MD, Institute of Legal Medicine, University Magna Graecia of Catanzaro, S Venuta-Medicina Legale, viale Europa, Catanzaro 88100, ITALY; Silvia Boca, Viale Europa, Catanzaro, ITALY; Pietrantonio Ricci, Viale Europa-Località Germaneto, Catanzaro, ITALY; Ciro Di Nunzio, MFS, PhD*, Magna Graecia University, Viale Europa, Germaneto, Legal Medicine, Catanzaro 88100, ITALY; and Santo Gratteri, MD*, Viale Europa, Germaneto, Catanzaro 88100, ITALY*

After attending this presentation, attendees will be able to describe the impact of histopathological investigation in a postmortem diagnosis of EM.

This presentation will impact the forensic science community by demonstrating the role of timely diagnosis to avoid sudden deaths in the absence of cardiac-specific symptoms.

The heart is a prime target of Polynuclear Eosinophil (PE) toxicity that is due to the release of basic proteins by eosinophils, including major basic proteins, cationic protein, and peroxidase. The most common manifestation of PE toxicity is Chronic Parietal Endocarditis (CPE). The heart damage appears to be a direct result of tissue injury produced by toxic eosinophil granule proteins; however, it is not known what causes eosinophilia in these patients and why the endocardium is especially susceptible to this type of injury. A number of parasitic infections may give rise to EM. Occasionally, drug reactions and rejection of a transplanted heart may produce EM. The incidence of EM is low but probably underestimated. The most common cause of death is the short-term occurrence of cardiogenic shock or dilated hypokinetic cardiomyopathy. Some patients have been successfully treated by early, intensive corticosteroid therapy and/or heart transplantation; however, diffuse myocardial involvement may lead to heart failure, and some of these patients may later develop dilated cardiomyopathy. The causes of sudden deaths are manifold, but, in the forensic field, very few cases of eosinophilic myocarditis are described in the literature. The difficulties of the postmortem diagnosis derive from the need to conduct in-depth histological exams and because the macroscopic data are unspecific.

Case Report: A 32-year-old Black man, a native of Liberia and an immigrant to southern Italy, was found dead in the immigration center. The external inspection of the corpse revealed an athletic constitution. The autopsy showed subarachnoid hemorrhage and fibrotic pleural adhesions of the ribs, and the heart exhibited an increase in volume, with grayish areas on the front surface. The cause of death remained unresolved; thus, the forensic pathologist conducted histological examinations. In particular, the heart was analyzed after fixation in 10% formaldehyde. The slides of the organs were prepared in paraffin and stained with hematoxylin-eosin. Histopathological examination provided the diagnosis of acute necrotizing EM of undetermined origin. Toxicological tests were performed and were negative. From the man's clinical history, it emerged that the day before death, the supervisors of the immigration center had called an ambulance as the man appeared to be in a confused state with pain in the posterior region of the right leg. Despite his recovery at that time, the man then died in the hospital within a few minutes without any possibility of intervention. Histological examination revealed an acute myocarditis associated with cerebral ischemic necrosis and subarachnoid hemorrhage. Therefore, in this case, it is shown that the eosinophilic action carried both cardiac and brain toxicity, generating a detrimental acute necrosis of tissue.

Conclusions: In cases of EM, it is important to make an early clinical diagnosis, and it is especially essential not to underestimate the neurological symptoms manifesting as early symptoms of heart disease, which may more quickly direct a diagnosis. In the forensic field, only histopathological investigation can identify the specific diagnosis.

Forensic Science, Eosinophilic Myocarditis, Sudden Death

*Presenting Author