H30 Histological Parameters of Myocarditis in Relation to the Cause of Death in Clinical and Forensic Autopsy Pathology

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Learning Overview: The goal of this presentation is to provide insight in the histological spectrum of myocardial inflammation and myocarditis and its relation to the cause of death.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by providing information that may aid practitioners in interpreting myocardial inflammation and its relation to the cause of death.

Myocarditis is a common histologic finding at autopsy. However, the significance of a histopathological diagnosis of myocarditis can be a matter of debate, even more so since the clinical presentation of myocarditis is highly variable and may range from subclinical symptoms to sudden arrhythmic death. Interpreting the role of myocarditis as causal, contributory, or of no significance at all in the cause of death can be especially challenging in cases where other, non-conclusive pathologic and/or medicolegal findings are also present.

To further evaluate the significance of myocarditis as a cause of death, a retrospective double-center study of forensic and clinical autopsy cases over a five-year period was performed. Specifically, the spectrum of histological inflammatory parameters in the myocardium in an autopsy population of 89 adult cases was reviewed and subsequently related these to the reported cause of death. Myocardial slides were reviewed for the distribution and intensity of inflammatory cell infiltrates; the predominant type of inflammatory cells; and the presence of fibrosis, hemorrhage, edema, and inflammation-associated myocyte death. Next, the cases were divided into three groups based on the reported cause of death at autopsy. Group 1 (n= 27) consisted of all individuals with an obvious unnatural, non-myocarditis-related cause of death. Group 2 (n=29) included all individuals in which myocarditis was interpreted to be one out of more possible causes of death. Group 3 (n=23) consisted of all individuals in which myocarditis was interpreted as the only significant finding at autopsy and no other cause of death was found.

Systematic application of histological parameters in these three groups showed that only a diffuse increase of inflammatory cells could discriminate significantly between an incidental presence of inflammation (Group 1) or a potentially significant one (Groups 2 and 3). Still, in 21 cases of Group 1, myocarditis could be diagnosed. Ten of these cases constituted multifocal myocarditis, and one showed a diffuse type of myocarditis. This indicates that myocarditis can be an incidental finding not related to the cause of death. Significant differences in inflammatory parameters were not found between Groups 2 and 3. In conclusion, caution should be taken with definitive statements pertaining to the cause of death due to myocarditis in order to prevent a potential underestimation of other potential causes of death, such as familial arrhythmias or unnatural causes of death.

Myocarditis, Histology, Cause of Death

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