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Autopsy findings in sudden cardiac death: A five-year review.

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Introduction

Sudden cardiac death (SCD) remains a significant public health concern worldwide, often affecting individuals without prior warning signs. Autopsy examinations are crucial in determining the precise cause of SCD, especially in cases where death occurs unexpectedly and without a known clinical history of cardiac disease. This five-year retrospective review analyzes autopsy findings to identify prevalent cardiovascular pathologies associated with SCD and to provide insights into its epidemiology and potential preventive strategies. [1].

Over a five-year period, comprehensive post-mortem examinations were conducted on individuals who died suddenly and were suspected of SCD. The analysis revealed that ischemic heart disease (IHD) was the most common underlying cause, particularly in individuals over 40 years of age. Coronary artery atherosclerosis with varying degrees of stenosis was frequently identified. In several cases, fresh thrombus formation or plaque rupture was observed, suggesting acute myocardial infarction as the immediate cause of death.[2].

In younger individuals, especially those under 35, structural abnormalities such as hypertrophic cardiomyopathy (HCM), arrhythmogenic right ventricular cardiomyopathy (ARVC), and congenital coronary artery anomalies were leading findings. HCM was characterized by asymmetric septal hypertrophy and myocardial fiber disarray, while ARVC showed fibro-fatty infiltration of the right ventricular myocardium. These conditions are often inherited and may not produce symptoms during life, underscoring the importance of genetic screening and family history evaluation. The review also highlighted the importance of a systematic approach to cardiac autopsy, including detailed gross examination, histopathological analysis, and toxicology. Accurate classification of SCD cases enhances our understanding of cardiovascular disease patterns and assists in the development of targeted preventive measures [3]

Myocarditis was another notable finding, particularly in adolescents and young adults. Inflammatory infiltration, myocyte necrosis, and interstitial edema were observed histologically. Viral infections were implicated in many of these cases, highlighting the need for awareness of post-viral cardiac complications, especially in the context of recent global viral outbreaks[4].

Valvular heart diseases, including calcific aortic stenosis and rheumatic mitral stenosis, were occasionally identified, particularly in older populations. Although not as frequent, they were found to be significant contributors to hemodynamic instability leading to sudden death. In some cases, autopsies revealed normal cardiac structures, and toxicological analysis indicated the presence of cardiotoxic substances such as illicit drugs, prescription medications, or alcohol. These cases were classified as sudden unexplained deaths, potentially due to arrhythmias or channelopathies such as long QT syndrome or Brugada syndrome, which do not leave visible structural traces. Molecular autopsy and genetic testing may be helpful in such instances to detect mutations in ion channel genes [5].

Conclusion

The five-year review of autopsy findings in sudden cardiac death illustrates the diverse etiology of

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these events, ranging from ischemic heart disease to genetic and inflammatory conditions. These findings emphasize the critical role of autopsy in clarifying the cause of death and guiding public health interventions aimed at reducing the incidence of sudden cardiac deaths.

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