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Forensic Medicine

UNFORESEEN DEMISE: EXPLORING THE ENIGMA OF SUDDEN DEATH- A CASE STUDY

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ABSTRACT Sudden death is an unexpected, non-traumatic fatal event that occurs within minutes to hours of symptom onset, often in individuals with no prior life-threatening conditions. It can result from various causes, including cardiovascular diseases (such as sudden cardiac arrest, myocardial infarction, and arrhythmias), neurological conditions (like stroke or epilepsy), and respiratory failures. According to the National Crime Records Bureau (NCRB) data 56,450 sudden deaths occurs in 2022 in India. So here I am reporting a case which was brought dead to casualty with a history of hypertension and diabetes for 10 years. This case study discusses what other factors can be taken into account to determine the cause of death when the postmortem, RFSL, and histopathological results are all negative.

KEYWORDS : Sudden death, NCRB, Postmortem

INTRODUCTION

Sudden death is defined as the sudden and unexpected death occurring within 24 hours from the onset of symptoms in a person who was not known to be suffering from any disease, injury or poisoning.[1]

According to the National Crime Records Bureau (NCRB) data 56,450 sudden deaths occurs in 2022 in India. The number of these deaths has been alarmingly rising over the previous three years. Out of 56,450 sudden deaths 32,457 people died from Cardiac causes in 2022. NCRB reports that the number of deaths due to cardiac causes increased by 12.5% in 2022 alone.[2]

CASE DETAILS

A 47 years old male patient was brought dead to casualty with history of sudden death on 29/06/2023.

Known case of hypertension and diabetes since 10 years. Positive history of chronic family issues. Case was labelled as MLC and body was shifted for postmortem examination.

Postmortem examination reveals that 50 ML serous fluid present in pericardial cavity (Fig no.1). RFSL report showed negative findings. Histopathological report shows Hypertrophy of left ventricular wall, Interventricular septum, and anterior wall of heart (Fig no.2).

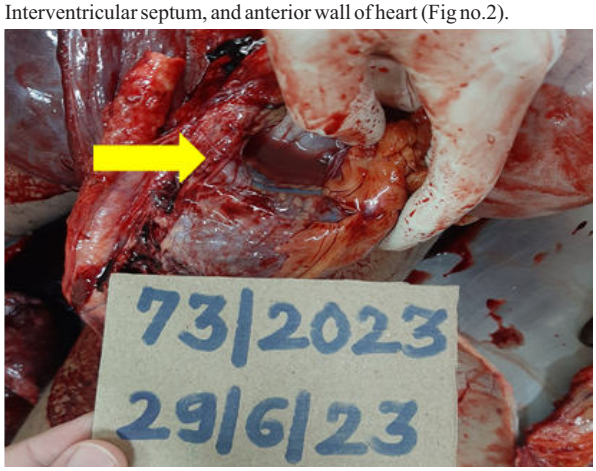
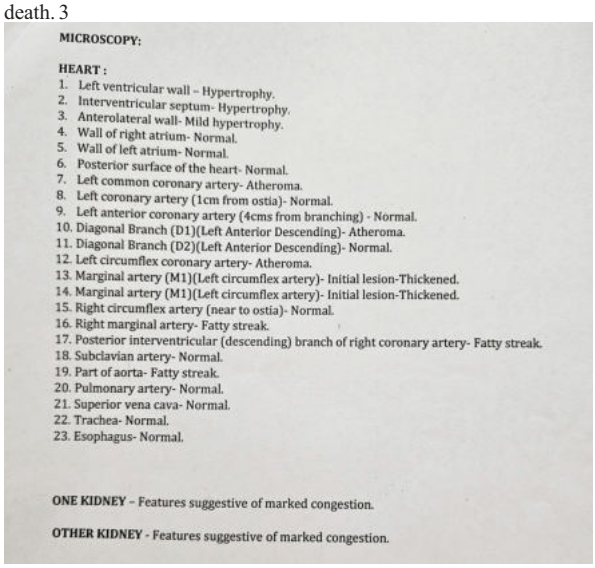


Fig no.1-Serous Fluid Pericardial Cavity

DISCUSSION

Based on the history, autopsy findings, RFSL report and HPE report - cause of death was given as – "death is due to compromised cardiac function as a result of complications of pre-existing cardiac disease."

In some sudden death cases there are no proper gross nor microscopic findings in the heart to opine regarding the cause of death. In case of Myocardial infarction (MI) microscopic changes are seen after 6-12 hours after death while gross changes are seen after 24 hours after death. But we can see rise in cardiac biomarkers levels 1 hour after the death. 3



MICROSCOPY:

HEART :

1. Left ventricular wall – Hypertrophy.
2. Interventricular septum- Hypertrophy.
3. Anterolateral wall- Mild hypertrophy.
4. Wall of right atrium- Normal.
5. Wall of left atrium- Normal.
6. Posterior surface of the heart- Normal.
7. Left common coronary artery- Atheroma.
8. Left coronary artery (1cm from ostia)- Normal.
9. Left anterior coronary artery (4cms from branching) - Normal.
10. Diagonal Branch (D1)(Left Anterior Descending)- Atheroma.
11. Diagonal Branch (D2)(Left Anterior Descending)- Normal.
12. Left circumflex coronary artery- Atheroma.
13. Marginal artery (M1)(Left circumflex artery)- Initial lesion-Thickened.
14. Marginal artery (M1)(Left circumflex artery)- Initial lesion-Thickened.
15. Right circumflex artery (near to ostia)- Normal.
16. Right marginal artery- Fatty streak.
17. Posterior interventricular (descending) branch of right coronary artery- Fatty streak.
18. Subclavian artery- Normal.
19. Part of aorta- Fatty streak.
20. Pulmonary artery- Normal.
21. Superior vena cava- Normal.
22. Trachea- Normal.
23. Esophagus- Normal.

ONE KIDNEY – Features suggestive of marked congestion.

OTHER KIDNEY - Features suggestive of marked congestion.

Fig no.2- Histopathological Report

So, in such cases cardiac biomarkers like cardiac troponin, I levels helps to find the cause of death especially when cardiac-related issues are suspected.

CONCLUSIONS

More studies should be undertaken to know the importance of cardiac specific troponin levels in blood collected at the time of declaration of death and pericardial fluid during autopsy to identify the cause of death in sudden cardiac deaths. This will further help us to reduce the number cases where cause of death goes undetermined.

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