



CASE REPORT

A Rare Case of Congenital Pericardial Cyst Detected Postmortem

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Abstract:

Congenital pericardial cysts are very rare and often found incidentally in many cases, however they can rarely cause life-threatening symptoms. We aimed to discuss on death the effect of the pericardial cyst and fatty changes in the atrioventricular (AV) node that were detected in the autopsy of a 23-year-old postpartum female.

In documents; it was written that the woman who was breastfeeding had been suffering from chest pain for some time. In autopsy; an oval, unilocular, cystic structure with a size of 7.5x7.5x4 cm adjacent to the upper lobe of the left lung, hanging on the outer surface of the pericardium was found. In the histopathological examination; fatty changes were observed in the AV node.

In our case, complications that occurred after the space-occupying effect of the cyst in the mediastinum, such as arrhythmia, right ventricular outflow tract obstruction, cardiac compression, and changes due to fatty AV node were evaluated.

Keywords: Pericardial Cyst, Postmortem, Sudden Cardiac Death, Fatty AV node.

Öz:

Konjenital perikardiyal kistler çok nadirdir ve birçok vakada tesadüfen saptanmasına karşın nadiren yaşamı tehdit edici semptomlara neden olabilir. 23 yaşındaki postpartum dönemdeki kadın olgunun yapılan otopsisinde saptanan perikardiyal kistin ve atrioventriküler (AV) nodda yağlanmaya bağlı değişikliklerin kişinin ölümü üzerindeki etkisini tartışmayı amaçladık.

Adli tahkikatta; emzirme döneminde olan kadının bir süredir göğüs ağrısı şikâyeti olduğu yazılıydı. Yapılan otopsisinde; perikardın dış yüzüne asılı halde, sol akciğer üst loba komşu 7,5x7,5x4 cm boyutunda, oval yapıda, unilokuler, intakt, içerisinde berrak sıvı bulunan kistik yapı görüldü. Histopatolojik incelemede; AV nodda yağlanmaya bağlı değişiklikler izlendi.

Olgumuzda mediastendeki kistin yer kaplayıcı etkisi sonrası gelişen aritmi, sağ ventrikül çıkış yolu tıkanıklığı, kardiyak bası gibi komplikasyonların ve AV nodda yağlanmaya bağlı değişikliklerin ölümüne sebebiyet verdiği değerlendirildi.

Anahtar Kelimeler: Perikardiyal Kist, Postmortem, Ani Kardiyak Ölüm, AV Nodda Yağlanma

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Conflict of Interest

The authors declare that they have no conflict of interests regarding content of this article.

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Ethical Declaration

Permission was obtained from The Council of Forensic Medicine with the date 05.03.2019 and number 21589509/2019/129 and Helsinki Declaration rules were followed to conduct this study.

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1. Introduction

Congenital anomalies of the pericardium are a rare group of diseases including congenital absence of pericardium, pericardial cyst and diverticulum. These congenital defects result from changes in embryological formation and the structure of the pericardium (1,2). Congenital pericardial cysts are rare benign congenital mediastinal lesions and their incidence is 7% among all mediastinal masses (1). Congenital pericardial cysts are congenital encapsulated cysts originating from pericardium in early developmental phases and they are not in contact with the pericardial cavity (2).

Congenital pericardial cysts are very rare and often found incidentally in many cases, however they can rarely cause life-threatening symptoms. They do not show any clinical symptoms unless they reach large sizes. However, when they do, they become symptomatic due to infection and cyst rupture as a result of pressure on cardiac structures (1, 2). They have also been shown to induce cardiac arrhythmias, including atrial fibrillation and ventricular tachycardia (3, 4).

We aimed to discuss the effect of the pericardial cyst and fatty changes in the atrioventricular (AV) node that were detected in the autopsy of a 23-year-old postpartum female patient who was found dead in her house and sent to our headquarters for the determination of the exact cause of death.

Ethical Declaration

Permission was obtained from The Council of Forensic Medicine with the date 05.03.2019 and number 21589509/2019/129 and Helsinki Declaration rules were followed to conduct this study.

2. Case Report

Forensic investigation, autopsy findings, histopathological examination findings, and systematic toxicological analysis results of a 23-year-old woman who was sent to the Forensic Medicine Headquarters Izmir Group Directorate Morgue Specialization Department were examined. Permission was obtained from The Council of Forensic Medicine with the date 05.03.2019 and number 21589509/2019/129 and Helsinki Declaration rules were followed to conduct this study.

In the forensic medical history obtained from the husband; it was stated that the woman was married to her husband for five years and they had two children. He woke up hearing the crying of their five-month-old baby and he went to wake his wife who was sleeping together in a separate room with the children. He found her lying in the prone position with a whitened face and a wet pillow before taking her to the hospital and then finding out that she was dead. She had been breastfeeding and on birth control. She had been suffering from chest pain for some time and weakness due to upper respiratory tract infection for about a week. She did not have a history of chronic disease or a heart condition.

In the external body examination, no abnormal examination findings and acute traumatic lesions were observed except for postmortem changes. When the head, neck and abdomen were opened and examined, no macroscopic pathological features were observed.

When the chest cavity was opened, it was observed that there was a 7,5x7,5x4 centimeter (cm) cystic sac hanging from the posterolateral aspect of the pericardial sac, adjacent to the medial surface of the upper lobe of the left lung (Figs. 1, 2), and the left lung was attached to the diaphragm. It was observed that there was a rudimentary, closed hole on the parietal leaf of the serous layer where the sac was held on the pericardium. The cyst was intact with clear fluid inside, hanging on the outer surface of the pericardium, and was not related to the pericardial space. Minimal petechial subepicardial bleeding was observed on the external surface of the heart. Heart morphology and branching of the main vessels emerging from the heart were normal. The heart weighed at 295 grams. The endocardium of the heart was in its normal appearance. No macroscopic pathological feature was observed in the aorta lumen, in the large vessels entering and exiting the heart. Aortic valve perimeter length was 6 cm, mitral valve perimeter was 10.2 cm, tricuspid valve perimeter was 13.5 cm, pulmonary valve perimeter was 7.7 cm, left ventricular wall thickness was 1.4 cm. Right ventricular wall thickness was measured as 0.3 cm. No traumatic lesions or any other macroscopic pathological features were detected in the chest area. The pouch was cut out from the junctional area with the pericardial membrane, and sampled as a whole for histopathological examination.



Figure 1. Cystic pouch on the pericardial external surface



Figure 2. Cystic pouch on the pericardial external surface

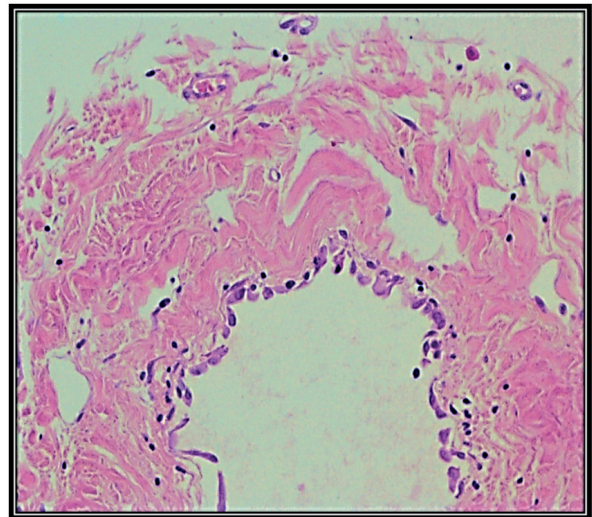


Figure 3. Cystic structure rich in collagen and elastic fibers, the wall of which is lined with single-row mesothelial cells (H&E Stain x 10)

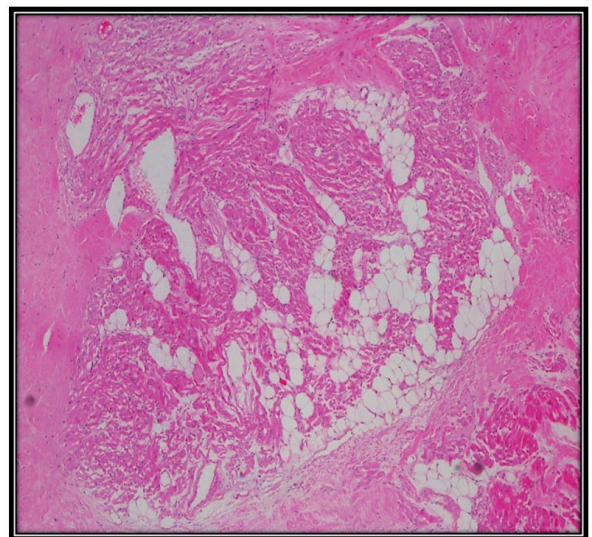


Figure 4. Fatty changes in the AV node (H&E Stain x 4)

In the report prepared as a result of searching for toxic substances registered in the library of our Chemistry Department, no drugs, stimulants and other substances were detected. In the report of our Histopathology Department, a pericardial cyst (Figure 3) was detected, in the cut sections of the heart's conduction system fatty changes were observed in the atrioventricular (AV) node (Figure 4), a small follicular bronchiolitis focus was seen in the lung tissue, and also intraalveolar bleeding areas and edema were detected.

There was no traumatic lesion causing death in the case, and no toxic substance was found in the toxicological analysis. There was a cystic structure in the mediastinum which was big enough to affect the heart's movements, the fatty changes in the AV node, and edema in the lung which all resulted in the conclusion that the death occurred as a result of the existing heart disease.

3. Discussion

Although cysts are generally asymptomatic, the most common symptom of cysts that reach large sizes is chest pain or pressure in the retrosternal area, dyspnea and cough. Pericardial cyst-related complications such as cyst rupture, cardiac compression, cardiac tamponade, right ventricular outflow tract obstruction, partial erosion in adjacent structures, congestive heart failure and even sudden death after causing fatal arrhythmias such as atrial fibrillation and ventricular fibrillation have been reported in the literature (3-6).

Hekmat et al. stated in their study that the pericardial cyst that they encountered, which was 13x8x5 cm in size, was one of the largest cysts in the literature (7). In a study presented by White et al., it was reported that a 38-year-old male patient presented with exertional syncope, atypical chest pain, sinus bradycardia, non-orthostatic hypotension, and a pericardial cyst with a diameter of 8.6x3.5 cm was detected (8). Therefore it can be said that the cyst with the size of 7.5x7.5x4 cm in this case, which has similar dimensions with the case presented by White et al., is also large in size and may cause complications.

In studies investigating how the presence of adipose tissue in the heart affects the onset of arrhythmias; it is stated that adipocytes may affect the electrical properties of myocytes. It has been demonstrated that adipose tissue is a contributing factor to cardiac arrhythmias (9, 10). Significant correlations have been shown between adiposine filters and arrhythmia (8, 11). Similar to the case in the study of Ley et al. (3), in our case, the pericardial cyst may have caused a fatal arrhythmia that caused sudden death after the it squeezed the atrium. In our case, the cyst may also have triggered a fatal arrhythmia due to lubrication changes in the AV node.

In this case, it was assessed that the effects of the large cyst on contraction functions developed due to the space-occupying effect, and the changes in the AV node due to lubrication, and the effects of the cyst on the conduction system of the heart, caused the death. Although it is reported in the literature that pericardial cysts often progress asymptotically, it should be considered during autopsy that it may cause death.

In conclusion, it can be said that when there is a pericardial cyst found incidentally or after it presented with symptom, it would be beneficial for such cases to have a close follow-up, or to consider the surgical treatment option if it reaches large dimensions.

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