

Pericardial Effusion in Patients Admitted in Emergency Department: Frequency and Causes

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ABSTRACT

Objective: A study of pericardial effusions in individuals with dyspnea was conducted to evaluate the prevalence and aetiology.

Study Design: Prospective/Observational Study

Place and Duration: Multicentric study conducted at DHQ Hospital Bagh AJK/ Federal Govt. Polyclinic Hospital Islamabad and DHQ Teaching Hospital Gujranwala Medical College, Gujranwala. Duration was six months from 1st Oct 2021 to 31st March 2022.

Methods: There were 135 patients of both genders had ages 18-75 years were presented in this study. Patients with dyspnea were admitted to emergency department. After obtaining informed written consent, we compiled detailed demographic information on all enrolled patients. Pericardial effusion was detected in all cases using echocardiography. The causes of pericardial effusion have been studied. SPSS 22.0 was used to analyze the data.

Results: There were 75 (55.6%) males and 60 (44.4%) females in this study. Mean age of the patients was 58.16±10.79 years and had mean BMI 23.9±10.45 kg/m². Majority of the patients were illiterate 90 (66.7%) and 45 (33.3%) were literate. We found frequency of pericardial effusions among 26 (19.3%) cases. Majority were males 17 (65.4%) and 9 (34.6%) were females. Most common cause of pericardial effusions were neoplastic diseases 10 (38.5%), idiopathic found in 8 (30.8%) cases, 3 (11.4%) had uremia, bacterial infections in 2 (7.7%) cases, frequency of HIV cases was 2 (7.7%) and 1 (3.8%) had other causes. Among 26 patients of pericardial effusions, small size effusion found in 14 (53.8%) cases, moderate size in 8 (30.8%) cases and large size in 4 (15.4%) cases.

Conclusion: According to this study, patients with unexplained dyspnea had an increased risk of developing pericardial effusion. The most prevalent cause of pericardial effusion was a neoplastic disease.

Keywords: Electrocardiogram, Causes, Pericardial Effusion, Frequency, Dyspnea

INTRODUCTION

An examination of the heart is routine in today's emergency rooms (ED). More than a decade ago, it was realised that life-threatening processes like cardiac tamponade might be swiftly detected in the ED environment, and that's when emergency echocardiography was first reported. [1,2] Focused abdominal sonography for trauma (FAST) includes a quick assessment of the heart. [3] Ultrasound examinations of the heart in an emergency department (ED) are often used to detect an effusion in one's heart chambers. Patients who do not get prompt treatment for pericardial effusions are at risk of mortality. [4] Distended jugular veins, pulsus paradoxus, and electrical alternans, on the other hand, are rare and only show late in the course of the condition. [5,6]

When a patient is rushed to the ER, the reason of their dyspnea might be several. Emergency doctors (EPs) often find that dyspnea is caused by a variety of conditions, including reactive airways disease, lung infections, mental illness, cardiac disease, anaemia, heart failure, and pulmonary embolism. However, some individuals still have a diagnosis of unexplained dyspnea even if pathology is ruled out. Pericardial effusion should be considered as an alternative diagnosis for patients with unexplained dyspnea, even if it seems implausible to the EP. [7,8]

Pericardial effusions are one of the most common reasons for urgent cardiac ultrasonography in the emergency department. Patients who do not get prompt treatment for pericardial effusions are at risk of mortality. However, signs such as dilated jugular veins, pulsus paradoxus, or electrical alternans are few and show late in the illness progression. [10] There are various possible causes of pericardial effusion, including malignant and nonmalignant conditions. [11] Numerous etiologies for pericardial effusions, including neoplasia (infection), congestive heart failure (iatrogenicity, radiation), trauma, connective tissue illnesses, pericardial damage, and metabolic reasons such as uremia and hypothyroidism, are recognised. [12,13]

In cases of symptomatic or substantial pericardial effusion, pericardiocentesis (a procedure that removes fluid from the heart)

might reveal the specific cause [14]. Tamponade and/or an unknown source of the effusion are other indicators... The gold standard for determining the cause of pericardial effusion is pericardiocentesis. [15]

It was the purpose of this research to investigate the prevalence of pericardial effusion and its related causes in individuals with unexplained breathlessness..

MATERIAL AND METHODS

This Prospective/Observational multicentric study was conducted at DHQ Hospital Bagh AJK/ Federal Govt. Polyclinic Hospital Islamabad and DHQ Teaching Hospital Gujranwala Medical College, Gujranwala. Duration was six months from 1st Oct 2021 to 31st March 2022 and comprised of 135 patients. After obtaining informed written consent, we compiled detailed demographic information on all enrolled patients. Excluded were those with surgical drainage or those under the age of 18.

Laboratory testing was completed on all patients. All of the patients had their chests x-rayed and ultrasounded. We performed a series of tests to determine whether or not the patient had pericardial effusion. It was considered tiny if the fluid stripe was less than 10 mm in length. Measurements of moderate-sized effusions ranged from 10 to 15 mm in diameter. Large effusions have a diameter of at least 15 mm. Some of the causes of pericardial effusion were studied, including neoplasms, idiopathic viral infection and collagen vascular disease. In SPSS 22, all the data was examined.

RESULTS

There were 75 (55.6%) males and 60 (44.4%) females in this study. Mean age of the patients was 58.16±10.79 years and had mean BMI 23.9±10.45 kg/m². Majority of the patients were illiterate 90 (66.7%) and 45 (33.3%) were literate. (table 1)

We found frequency of pericardial effusions among 26 (19.3%) cases. (fig 1)

Among 26 cases, majority were males 17 (65.4%) and 9 (34.6%) were females. 21 (80.8%) patients had ages >35 years and 5 (19.2%) had ages <35 years.(table 2)

Table-1: Demographics data of all cases

Variables	Frequency	Percentage
Mean age (years)	58.16±10.79	
Mean BMI (kg/m ²)	23.9±10.45	
Gender		
Male	75	55.6
Female	60	44.4
Education status		
Yes	90	66.7
No	45	33.3

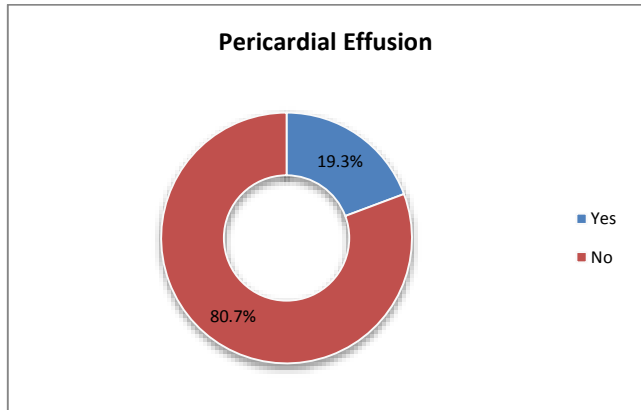


Figure-1: Association of pericardial effusion

Table-2: Gender and age among cases of pericardial effusion

Variables	Frequency (26)	Percentage
Gender		
Male	17	65.4
Female	9	34.6
Age (years)		
>35	21	80.8
<35	5	19.2

Among 26 patients of pericardial effusions, small size effusion found in 14 (53.8%) cases, moderate size in 8 (30.8%) cases and large size in 4 (15.4%) cases.(table 3)

Table-3: Size of the pericardial effusion

Variables	Frequency	Percentage
Size of Pericardial Effusion		
Small	14	53.8
Moderate	8	30.8
Large	4	15.4

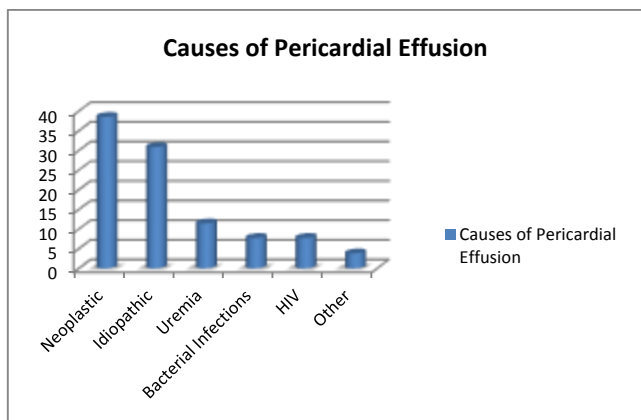


Figure-2: Causes of pericardial effusion

Most common cause of pericardial effusions were neoplastic diseases 10 (38.5%), idiopathic found in 8 (30.8%) cases, 3 (11.4%) had uremia, bacterial infections in 2 (7.7%) cases, frequency of HIV cases was 2 (7.7%) and 1 (3.8%) had other causes.(fig 2)

DISCUSSION

There is a significant mortality and morbidity rate associated with pericardial effusion, which is a frequent condition. Dyspnea that cannot be explained is a major factor in the development of pericardial effusion, which can lead to heart issues. [16]

In this study 135 patients of dyspnea had ages 18-75 years were presented. There were 75 (55.6%) males and 60 (44.4%) females in this study. Mean age of the patients was 58.16±10.79 years and had mean BMI 23.9±10.45 kg/m². Majority of the patients were illiterate 90 (66.7%) and 45 (33.3%) were literate. These findings were comparable to the previous researches.[17,18]We found frequency of pericardial effusions among 26 (19.3%) cases. According to Shimony et al[19], 13.6% of patients with unexplained dyspnea had pericardial effusion. 28.6% of patients with MI had pericardial effusion, according to another study by Albugami and colleagues[20]. The incidence of pericardial effusion has been shown to range from 10% to 30% in several additional investigations. [21,22]

Among 26 cases, majority were males 17 (65.4%) and 9 (34.6%) were females. 21 (80.8%) patients had ages >35 years and 5 (19.2%) had ages <35 years. Pericardial effusion has been shown to be more prevalent in men than women, with a 55 to 70 percent chance of acquiring the condition compared to a lower risk of having it in females in previous researches.[22,23] Among 26 patients of pericardial effusions, small size effusion found in 14 (53.8%) cases, moderate size in 8 (30.8%) cases and large size in 4 (15.4%) cases. According to Sagristà-Sauleda et al[24], pericardial effusion was found in 17 percent of hypothyroid individuals in this investigation. Pericardial effusion was seen in 25 of the 70 hypothyroid individuals studied.[25] It was observed in 11 individuals (15.71 percent) and in one patient (1.01 percent) that they had mild pericardial effusions (0.01 percent). Shimony et al [19] also found that the majority of patients had minor pericardial effusions, which is consistent with our results.

In the southern portion of Saudi Arabia (the Asir region), uremic and tuberculous pericarditis were previously believed to be the most prevalent causes of pericardial illness [25]. According to the demographics and function of the healthcare institution, pericardial effusion is more likely to be caused by a specific reason than by a combination of these two factors. Pericardial effusions were formerly thought to be most often caused by cancer and uremia [26]. Twenty patients with pericardial effusion were studied by Colombo et al., and 44 percent of them had cardiac tamponade. Neoplastics accounted for about half (44 percent), idiopathic causes made up around three-quarters (32/35%), and the remaining twenty percent (20%) were all related to anaemia [27]. Idiopathic diseases were identified to be the most common cause of pericardial effusions by Turak et al. in their study of 104 patients with well-established mild to severe pericardial effusions [28]. Researchers found that pericardial effusion may be caused by malignancy, congestive heart failure, and TB. Some 322 participants in another major research were found to be suffering from mild to severe pericardial effusion. A whopping 37% of these patients had cardiac tamponade. Idiopathic (16%), iatrogenic (16%), and cancerous (13%) were the most prevalent causes of pericardial effusion in that research.[29]

In our study, most common cause of pericardial effusions were neoplastic diseases 10 (38.5%), idiopathic found in 8 (30.8%) cases, 3 (11.4%) had uremia, bacterial infections in 2 (7.7%) cases, frequency of HIV cases was 2 (7.7%) and 1 (3.8%) had other causes. Findings in this study were consistent with earlier research in which cancer, viral infection and renal failure were among the leading causes of pericardial effusion. According to other research, viral infection is the most prevalent cause of acute

pericarditis, which may be linked to a wide range of illnesses. For example, infections like pneumonia, heart attacks, and chest injuries may lead to pericarditis.[25-29]

CONCLUSION

According to this study, patients with unexplained dyspnea had an increased risk of developing pericardial effusion. The most prevalent cause of pericardial effusion was a neoplastic disease.

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