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RESEARCH ARTICLE

ETIOLOGY AND CLINICAL PROFILE OF PERICARDIAL EFFUSION PATIENTS

Owais Ahmed Wani¹, Nasir Ali², Syed Maqbool¹, Parvez Mohi Ud Din Dar³ and Suhail Masood Khan³

1. DrNB Cardiology, SSH, GMC Jammu, Jammu and Kashmir, India.
2. Consultant Cardiology, SSH, GMC Jammu, Jammu and Kashmir, India.
3. Assistant Professor and Head of Trauma and Emergency Medicine, All India Institute of Medical Sciences, Vijaypur, Jammu, Jammu and Kashmir, India.
4. DrNB Urology, SSH, GMC Jammu, Jammu and Kashmir, India.

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Abstract

Background Pericardial effusion is one of the most prevalent disorders. Pericardial effusion can create substantial symptoms and a lower quality of life, but it's also linked to a higher risk of cardiopulmonary failure, mortality, and death. Pericardial effusion has a variety of causes that are related to the relative occurrence of certain diseases in different parts of the world.

Methods: it was a retrospective study that includes data from all pericardial effusion cases diagnosed. Echocardiography was used to diagnose a total of 50 cases with pericardial effusion. Complete blood count with ESR, blood urea, serum creatinine, tuberculin skin test, chest X-ray, ECG, Thyroid profile, ANA, Rheumatoid factor, CT chest / MRI, and pericardiocentesis were all used to determine the source of the pericardial effusion. Cells, proteins, LDH, malignant cells, ADA, PCR (for Mycobacterium tuberculosis), gram staining, AFB staining, and cultures were all examined in the pericardial fluid. Iatrogenic (cardiac surgery, catheterization) and post-traumatic cases were excluded.

Results: The majority of the patients were between the ages of 50 and 70. Thirty patients (60%) were men and 20 patients (40%) were women. Tuberculosis was the most prevalent cause of pericardial effusion, accounting for 28 % of cases, followed by Idiopathic 18%, Uremia 12 %, and Malignant 14 %. HIV infection was the least common cause of pericardial effusion, accounting for 2% of cases. Tachycardia was the most common clinical symptom, in 70% of patients, followed by Breathlessness (60%), and fever (56 %).

Conclusions: Tachycardia, shortness of breath, fever, heaviness of chest, cough, chest pain, and other symptoms of pericardial effusion have been noted in this study. Tuberculosis, idiopathic/viral, uremic, neoplastic, CCF, hypothyroidism, post-MI, etc. are all major factors for the development of pericardial effusion.

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Introduction:-

The pericardium is a fibrous sac that surrounds the heart and is divided into two layers: the thicker outer parietal pericardium and the thinner inner visceral pericardium. Within its two layers, the pericardium generally holds up to

Corresponding Author:- Owais Ahmed Wani

Address:- DrNB Cardiology, SSH, GMC Jammu, Jammu and Kashmir, India.

50 mL of serous fluid. Pericardial fluid is a plasma ultrafiltrate that is resorbed by the lymphatics from the fibrous parietal pericardium.¹ The normal pericardium prevents rapid dilatation of heart chambers, particularly the right atrium and ventricle, during exercise and with hypervolemia by applying a restraining force.² Acute and recurrent pericarditis, isolated pericardial effusion with or without cardiac tamponade, and constrictive pericarditis are the most prevalent pericardial disorders.

In everyday clinical practise, pericardial effusion is a rather common finding. The presence of an inordinate amount of fluid in the pericardial area is known as pericardial effusion (PE). It can be caused by a number of different local and systemic illnesses, or it might be idiopathic. Acute or chronic pericardial effusions exist. The underlying aetiology determines the source of aberrant fluid production; nevertheless, transudative fluids result from blockage to fluid drainage, which happens through lymphatic channels. Exudative effusion develops in the pericardium as a result of inflammatory, viral, neoplastic, or autoimmune events. The rate at which fluid accumulates in the pericardial sac determines the clinical signs of pericardial effusion. With as little as 80 mL of fluid, rapid pericardial fluid accumulation can induce high intrapericardial pressures, but slowly developing effusions can collect up to 2 litres without symptoms.^{3,4}

Infectious/idiopathic pericarditis, cancer, renal failure, and collagen vascular disease are all common causes of pericardial effusion. Idiopathic pericardial effusion is defined as a pericardial effusion caused by acute pericarditis lasting no more than 1 to 2 weeks. Although most idiopathic cases are assumed to be viral in origin, testing for specific viruses is not regularly performed because to the high cost, low yield, and minimal influence on management.⁵⁻⁷ In any event, cardiomegaly combined with clean lungs should raise the possibility of a pericardial effusion. The echocardiography is the most widely used and reliable method for determining the presence and size of a pericardial effusion; it also provides useful information for assessing hemodynamic consequences. In these circumstances, computed tomography (CT) is a reliable way to determine the nature of the echocardiographic result.⁸ Mild pericardial effusions are defined as an echo-free space of > 10 mm by M-mode echocardiography, moderate effusions as an echo-free space of 10-20 mm during diastole from anterior and posterior pericardial spaces, and severe effusions as a sum of echo-free spaces > 20 mm.^{9,10} In industrialised countries, many studies suggest that the most prevalent causes of pericardial effusion are neoplastic, idiopathic, and uremic, but infectious, collagen vascular disease, and post-MI are less common.^{10,11}

Methods:-

This observational hospital-based study was conducted in department of cardiology. it was retrospective study that includes data from all pericardial effusion cases diagnosed between July 2019 and July 2021. The information was gathered from the medical records section. Pericardial effusion was found in 50 cases by echocardiogram, which was defined as an echo free region of pericardial fluid more than 10 mm deep in front of the right ventricle and beyond the left ventricle. Complete blood count with ESR, blood urea, serum creatinine, tuberculin skin test, chest X-ray, ECG, thyroid profile, ANA, rheumatoid factor, CT chest/MRI, and pericardiocentesis were all used to determine the cause of PE. Cells, proteins, LDH, malignant cells, ADA, PCR (for Mycobacterium tuberculosis), gramme staining, AFB staining, and cultures were all examined in the pericardial fluid. Clinical history, physical, and specific laboratory testing for tuberculosis, uraemia, cancer, collagen vascular disease, hypothyroidism, and other conditions were used to make the final diagnosis. The diagnosis of acute idiopathic/viral aetiology was made on the basis of the clinical presentation and the absence of alternative etiologies on screening tests. The pigtail catheter was placed in the pericardial space using a subxiphoid technique for therapeutic echo-guided percutaneous pericardiocentesis. Iatrogenic (cardiac surgery, catheterization) and post-traumatic cases, as well as those under the age of 18 were excluded.

Results:-

This study included 50 patients with age ranging from 18 to 90 years, majority of patients were aged between 50-70 years only 6 patients 12% admitted with pericardial effusion of the age group between 26-35 years. Thirty patients (50%) were male and 20 patients (40%) were female. Most common etiology of pericardial effusion was tuberculosis (28%), followed by Idiopathic (18%) then Uremia (12%), and Malignant (14%). The least common etiology of pericardial effusion was HIV infection (2%) (Table 1). The most common clinical feature was Tachycardia (70%), followed by Breathlessness (60%) and fever was (56%) of patients. The least common clinical feature was Hypotension (24%) (table 2)

Table 1:- Distribution of pericardial effusion patients based on diagnosis.

Diagnosis	No of patients	Percentage
Tubercular effusion	14	28
Idiopathic/viral	9	18
Uremia	6	12
Malignant	7	14
CCF	4	8
Hypothyroidism	2	4
Collagen vascular disease	2	4
PostMI	3	6
Pyogenic	2	4
HIV infection	1	2

Table 2:- Clinical presentation of patients of pericardial effusion.

Sign and symptoms	No of patients	Percentage
Tachycardia	35	70
Breathlessness	30	60
Fever	28	56
Heaviness of chest	30	60
Cough	30	60
Chest pain	24	48
Pulse paradoxus	22	44
Hypotension	12	24

Discussion:-

Pericardial effusion can happen at any age, although the causes change depending on the age. In our study, the majority of the 50 patients with pericardial effusion were between the ages of 50 and 70. This finding is in line with studies from poor and emerging nations, but differs from some Western studies. Because of the high prevalence of neoplastic disease and the low prevalence of infectious disease. In their community, there is no sex interpretation associated with pericardial effusion.

The discovery of a pericardial effusion in a patient with an underlying cancer provides a more challenging conundrum in industrialised countries, as pericardial effusion is typically owing to other causes rather than direct neoplastic pericardial involvement. Malignant pericardial illness was detected in 18 (58%) of 31 patients with underlying malignancy and pericarditis in Posner's series¹², while 32% of the patients had idiopathic pericarditis and 10% had radiation-induced pericarditis. Porte et al¹³ studied 114 patients with recent or remote history of cancer and a pericardial effusion of unknown origin requiring drainage for diagnostic or therapeutic purposes. Pericardioscopy was performed in 112 patients with pericardial fluid analysis and biopsy of abnormal structures or deposits under direct visual control. Malignant pericardial disease was found in 44 (38%) patients, while 70 (61%) patients had non-malignant pericardial effusions, Idiopathic in 33 patients, radiation-induced in 20 patients, infectious effusion in 10 patients, and hemopericardium as a result of coagulation disorders in 8 patients. Corey et al¹⁴ investigated the etiology of pericardial effusion in 57 patients. An etiologic diagnosis was made in 53 patients (93%). The most common diagnoses were malignancy (23%), viral infection (14%), radiation-induced inflammation (14%), collagen-vascular disease (12%) and uremia (12%).

Sagrìstà-Sauleda et al¹⁰ studied 322 patients, 132 of whom had a mild pericardial effusion and 190 of whom had a severe pericardial effusion. Idiopathic was the most common diagnosis in this series, accounting for 20%, Neoplastic for 13%, Post MI for 8%, Uremia for 6%, Collagen vascular disease for 5%, and Tubercular for 2%. However, the most common cause of pericardial effusion in our study was infectious, which is consistent with earlier studies conducted in underdeveloped countries.

Dyspnea, pleuritic chest discomfort, cough, and hypotension were among the clinical characteristics that prompted referring physicians to request an echocardiographic investigation.

The most common clinical sign in our study was tachycardia (70 %), followed by dyspnea (60 %) and fever (56 %). Hypotension was the least common clinical characteristic (20 %).

Conclusion:-

Tachycardia, shortness of breath, fever, heaviness of chest, cough, chest pain, and other symptoms of pericardial effusion have been noted in this study. Tuberculosis, idiopathic/viral, uremic, neoplastic, CCF, hypothyroidism, post-MI, etc. are all major illness factors for the development of pericardial effusion. This research could aid in the early detection and treatment of individuals with pericardial effusion, which is still a difficult disease to diagnose and treat, especially in rural regions. To have a better knowledge of the impact of pericardial effusion, more extensive epidemiologic studies are needed.

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Ethical approval:

The study was approved by the institutional ethics committee.

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