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Research Article

Study of etiological and clinical profile of pericardial effusion in a tertiary care hospital in Kosi region of Bihar, India

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ABSTRACT

Background: Pericardial effusion is one of the common diseases presenting in emergency and outpatient departments of a tertiary care center. Pericardial effusion can cause significant symptoms and diminished quality of life, but more importantly, is associated with increased risk of cardio respiratory failure, mortality and death. The etiology of pericardial effusion varies in different parts of the world and is related to the relative prevalence of different diseases.
Methods: This is a retrospective where data from all the cases diagnosed with pericardial effusion in the medicine department of KMCH from July 2014 to July 2015 were included. Altogether 66 cases diagnosed with pericardial effusion were established by Echocardiograpy. Evaluation for the cause of pericardial effusion included 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. Pericardial fluid was analysed for cells, proteins, LDH, malignant cells, ADA, PCR (for mycobacterium tuberculosis), gram staining, AFB staining and cultures. Iatrogenic (cardiac surgery, catherterization) and post-traumatic cases and age <15 years were excluded.
Results: Majority of patients ware aged between 56-75 years. Thirty-five patients (53.03%) were male and 31 patients (46.96%) were female. Most common etiology of pericardial effusion was tuberculosis 27.27% followed by Idiopathic 19.69% then Uremia 16.66%, and Malignant 13.63%. The least common etiology of pericardial effusion was HIV infection 1.51%.The most common clinical feature was Tachycardia 69.69%, followed by Breathlessness 60.60% and fever was 54% of patients.
Conclusions: By this study, we have observed various presenting feature for pericardial effusion are tachycardia, shortness of breath, fever, heaviness of chest, cough, chest pain etc. The important disease factor for the occurrence of pericardial effusion such as tuberculosis, idiopathic/viral, uremic, neoplastic, CCF, hypothyroidism, post MI, etc.

Keywords: Pericardial effusion, Clinical features, Tachycardia, Etiology, Tuberculosis

INTRODUCTION

The pericardium is a fibrous sac surrounding the heart, the thicker, outer parietal pericardium and an inner, thinner visceral layer. Pericardium normally contains up to 50 ml of serous fluid within its two layers.[1] Pericardial fluid is an ultrafiltrate of the plasma, from the fibrous parietal pericardium and is resorbed by the lymphatics. The normal pericardium, by exerting a restraining force, prevent sudden dilation of cardiac chamber, especially the right atrium and ventricle, during the exercise and with hypervolemia.[2] The most common forms of pericardial diseases include acute and recurrent

pericarditis, isolated pericardial effusion with or without cardiac tamponade, and constrictive pericarditis.

Pericardial effusion is a relatively common finding in every day clinical practice. Pericardial effusion (PE) is the presence of an abnormal amount of fluid in the pericardial space. It is caused by a variety of local and systemic disorders, or may be idiopathic. Pericardial effusions can be acute or chronic. The cause of abnormal fluid production depends on the underlying etiology, transudative fluids result from obstruction to fluid drainage, which occurs through lymphatic channels. Exudative effusion occurs secondary to inflammatory, infectious, malignant or autoimmune processes within the pericardium. Clinical manifestations of pericardial effusion are highly dependent on the rate of accumulation of fluid in the pericardial sac. Rapid accumulation of pericardial fluid may cause elevated intrapericardial pressures with as little as 80 ml of fluid, while as slowly progressing effusions can accumulate upto 2 liters without symptoms.[3,4]

Commonly encountered causes of pericardial effusion are infectious/idiopathic pericarditis, malignancy, renal failure and collagen vascular disease. Pericardial effusion resulting from acute pericarditis of no more than 1 to 2 weeks duration is considered idiopathic. Most idiopathic cases are presumed to be of viral etiology, but testing for specific viruses is not routinely done because of the cost involved, low yield, and negligible impact on management.[5-7] In any case, the finding of cardiomegaly with clear lungs should raise the suspicion of a pericardial effusion. The echocardiogram is the most available and reliable technique in order to verify the presence and the amount of a pericardial effusion; in addition, the echocardiogram offers valuable data for evaluation of hemodynamic repercussion. In these cases, computed tomography (CT) is a reliable method to precisely identify the nature of this echocardiographic finding[8]. Mild pericardial effusion consider when echo free space is > 10 mm by M-mode echocardiography while the moderate effusions were defined as an echo-free space of anterior plus posterior pericardial spaces of 10-20 mm during diastole, and severe effusions as a sum of echo-free spaces > 20 mm.[9,10] In developed countries the different study show the following results such as commonest cause of pericardial effusion is neoplastc, idiopathic and uremic, but less common cause is infectious, collegen vascular disease and post MI.[10,11]

METHODS

The observational hospital based study was carried out in the department of medicine Katihar Medical College and Hospital, Katihar. This is a retrospective where data from all the cases diagnosed with pericardial effusion in the medicine department of KMCH from July 2014 to July 2015 were included. Data was taken from medical record section. Altogether 66 cases diagnosed with pericardial effusion was established by echocardiography, seen as echo free space of pericardial fluid more than 10 mm deep in front of the right ventricle and beyond the left ventricle.

Evaluation for the cause of PE included 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. Pericardial fluid was analysed for cells, proteins, LDH, malignant cells, ADA, PCR (for mycobacterium tuberculosis), gram staining, AFB staining and cultures. Final diagnosis was based on clinical history, examination, and specific laboratory investigations for tuberculosis, uraemia, malignancy, collagen vascular disease hypothyroidism etc. The diagnosis of acute idiopathic/viral etiology was presumptive and was based on the clinical picture, and negative screening tests for other etiologies. Therapeutic Echo-guided percutenaous pericardiocentesis was performed by placing pigtail catheter in pericardial space through subxiphoid approach. Iatrogenic (cardiac surgery, catherterization) and post-traumatic cases and age <15 years were excluded.

RESULTS

Table 1: Age wise distribution of patients.

Age in years	No of patients	Percentage
16-25	9	13.63
26-35	4	6.06
36-45	5	7.57
46-55	10	15.15
56-65	13	19.69
66-75	16	24.24
76-85	9	13.63

Table 2: Gender wise distribution of patients.

Sex	No of patients	Percentage
Male	35	53.03
Female	31	46.96

This study included 66 patients with age ranging from 16 to 85 years, Table-1 show majority of patients ware aged between 56-75 years (n=29, 44%) only 4 patients 6.06% admitted with pericardial effusion of the age group between 26-35 years. Thirty-five patients (53.03%) were male and 31 patients (46.96%) were female Table 2.

Table 3 show the most common etiology of pericardial effusion was tuberculosis (n=18; 27.27%), followed by Idiopathic (N=13; 19.69%) then Uremia (n=11; 16.66%), and Malignant (n=09; 13.63%). The least common etiology of pericardial effusion was HIV infection (n=01; 1.51%).

The most common clinical feature was Tachycardia (n=46; 69.69%), followed by Breathlessness (no=40;

60.60%) and fever was (no=36; 54%) of patients. The least common clinical feature was Hypotention (no=20; 30.30%) (Table 4).

Table 3: Distribution of pericardial effusion patients based on diagnosis.

Diagnosis	No of patients	Percentage
Tubercular effusion	18	27.27
Idiopathic/viral	13	19.69
Ureamia	11	16.66
Malingnant	09	13.63
CCF	05	7.57
Hypothyroidism	03	4.54
Collegen vascular disease	02	3.03
Post MI	02	3.03
Pyogenic	02	3.03
HIV infection	01	1.51

Table 4: Clinical presentation of patients of pericardial effusion.

Sign and symptoms	No of patients	Percentage
Tachycardia	46	69.69
Breathlessness	40	60.60
Fever	36	54.54
Heaviness of chest	31	46.96
Cough	30	45.45
Chest pain	23	34.84
Pulsesparadoxes	22	33.33
Hypotension	20	30.30

Table 5: Pericardial effusion patients presented with shortness of breath with different etiology.

Diagnosis	No of patients	Percentage
Tubercular effusion	13	72.22
Idiopathic/viral	06	46.15
Ureamia	09	81.81
Malignant	03	33.33
CCF	05	100.00
Hypothyroidism	01	33.33
Collegen vascular disease	00	00.00
Post MI	02	100.00
Pyogenic	01	50.00
HIV infection	00	00.00

Table 5 show, 13 patients (72.22%) of tubercular pericardial effusion out of 18 patients of pericardial effusion presented with shortness of breath, 6 patients (46.15%) of pericardial effusion due to idiopathy out of 13 patients presented with shortness of breath, all Five patients (100%) of pericardial effusion due to CCF and 2 patients of Post MI admitted with shortness of breath. No any patients of pericardial effusion due to collegen vascular disease and HIV presented with shortness of breath.

Table 6: Pericardial effusion patients presented with fever with different etiology.

Diagnosis	No of patients	Percentage
Tubercular effusion	16	88.88
Idiopathic/viral	07	53.84
Ureamia	03	27.27
Malingnant	06	66.66
CCF	01	20.00
Hypothyroidism	00	00.00
Collegen vascular disease	00	00.00
Post MI	00	00.00
Pyogenic	02	100.00
HIV infection	01	100.00

Table 6 shows that sixteen patients (88.88%) of Tubercular pericardial effusion out of 18 patients admitted with fever. Only one patients (20%) out of 5 patients of CCF presented with fever. All patients (100%) of pericardial effusion due to pyogenic and HIV admitted with fever. No any patients of collegen vascular disease, post MI and Hypothyroidism admitted with fever.

Table 7 shows, twelve patients (66.66%) of tubercular pericardial effusion admitted with cough. Only 2 patients (18.18%) of Uremic pericardial effusion out of 11 patients presented with cough. About 60% of CCF patients presented with cough, no any patients of collegen vascular and post MI patients presented with cough.

Table 7: Pericardial effusion patients presented with cough with different etiology.

Diagnosis	No of patients	Percentage
Tubercular effusion	12	66.66
Idiopathic/Viral	06	46.15
Ureamia	02	18.18
Malingnant	04	44.44
CCF	03	60.00
Hypothyroidism	01	33.33
Collegen vascular disease	00	00.00
Post MI	00	00.00
Pyogenic	01	50.00
HIV infection	01	100.00

DISCUSSION

Pericardial effusion can occur at any age but age specific etiologies may differ. In our study, Out of 66 patients of pericardial effusion, majority of patients ware age group of 56-75 years 43.99% (Table 1). This finding is consistent with poor and developing countries studies, but differ from some western studies. Due to low prevalence

of infecious disease and high prevalence of neoplastic disease. In their population there is no interpretation of sex with pericardial effusion in this population.

In develop countries, The finding of a pericardial effusion in patients with underlying malignancy creates a more complex dilemma, as not infrequently pericardial effusion is due to alternative causes and not to direct neoplastic pericardial involvement. In Posner's series[12] malignant pericardial disease was diagnosed in 18 (58%) of 31 patients with underlying cancer and pericarditis, while 32% of the patients had idiopathic pericarditis and 10% had radiation induced pericarditis. Porte et al[13] 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 al[14] 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%).

The study by Sagristà- Sauleda et al[10] included 322 patients, 132 with moderate and 190 with severe pericardial effusion. In this series, the most common diagnosis was Idiopathic-20%, Neoplastic-13%, Post MI-8%, uremia-6%, collegen vascular disease-5%, Tubercular-2%.

But in our study, the commonest cause of pericardial effusion was infectious, Tubercular 18 patients (27.27%), idiopathic/viral 13 patients (19.69%), but Neoplastic cause is only 13.63%. There is no any case of pericardial effusion due to radiation.

The clinical features that led referring physicians to order the echocardiographic study included dyspnea in 44 patients (83%), pleuritic chest pain in 22 (42%), cough in 5 (9%) and hypotension in 2 patients. At physical examination systolic blood pressure was higher than 100 mmHg in 94% of patients, elevation of the jugular venous pressure was suspected in only 74%, hepatomegaly was present in 28%, and pulsus paradoxus was appreciated in only 36% of patients.[15]

In our study, the most common clinical feature was tachycardia (n=46; 69.69%), followed by breathlessness (no=40; 60.60%) and fever was (no=36; 54%) of patients. The least common clinical feature was hypotension (no=20; 30.30%).

CONCLUSION

By this study, we have observed various presenting feature for pericardial effusion are tachycardia, shortness of breath, fever, heaviness of chest, cough, chest pain etc. The important disease factor for the occurrence of pericardial effusion such as tuberculosis, idiopathic/viral, uremic, neoplastic, CCF, hypothyroidism, post MI, etc. This study would help in early diagnosis and prompt treatment of patients with pericardial effusion especially in remote areas which remains a challenging problem for diagnosis and treatment. More detailed epidemiologic studies are required to improve understanding of the burden of pericardial effusion.

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