ORIGINAL ARTICLE

Clinico-Epidemiological Study of Pericardial Effusion in Northern India

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Abstract

Background: Pericardial effusions may be discovered incidentally or as the life-threatening scenario of cardiac tamponade. Hence, etiological identification of pericardial effusion may prove to be crucial inpatient management. **Aim**: To assess the clinical presentation and etiology of pericardial effusion at a tertiary-care centre in India. **Methods**: This was a retrospective, observational, single-centre one-year hospital-based study. Data from 70 diagnosed cases of pericardial effusion from our tertiary-care centre in India from August 2016 to July 2017 was retrospectively reviewed. A diagnosis of pericardial effusion was confirmed based on findings from clinical history, echocardiographic examination, specific laboratory investigations, and radiological investigations. Pericardial fluid analysis was also performed. **Results**: The mean age of the patients was 46.87±14.40 years. Almost equal frequencies of men 36 (51.4%) and women 34 (48.6%) were observed. The most commonly observed signs/symptoms of patients diagnosed with pericardial effusion was raised jugular venous pulse in 39 (55.7%) patients, breathlessness in 36 (51.4%) patients, and tachypnea and tachycardia (heart rate >100 beats per minute) in 33 (47.1%) patients each. An etiology of tubercular effusion was common 32 (44.4%) patients. On analyzing data according to the underlying etiology, the most frequent sign/symptom was raised jugular venous pulse in 20 (62.5%) patients diagnosed with tubercular effusion, tachypnea in 10 (52.6%) patients diagnosed with hypothyroidism and tachycardia in 12 (63.2%) patients with a diagnosis other than pericardial effusion or hypothyroidism. **Conclusions**: The high prevalence of tuberculosis in India warrants increased control and awareness of this infection.

Keywords

Pericardial Tamponade; Jugular Venous Pressure; Echocardiography; Tuberculosis

Introduction

Pericardial effusion may be defined as the abnormal accumulation of fluid in the pericardial cavity. This fluid build-up may be attributed to idiopathic causes or local or systemic disorders (1). It may have an asymptomatic presentation in a substantial number of patients and therefore it is often accidentally detected on chest x-rays or echocardiograms. (2).

Further, due to geographically diverse clinical presentation and etiology, data from these geographies cannot be generalized.

Aims & Objectives

- To assess the clinical profile of pericardial effusion.
- To assess the etiological spectrum of pericardial effusion.

Material & Methods

Study type and patient population: This was a retrospective, observational, single-centre study to examine the clinical and etiological profiles of pericardial effusion.

Study area & duration: The study was conducted in a tertiary-care hospital in north India over a period of one year from August 2016 to July 2017.

Inclusion Criteria: Patients admitted to the emergency department with moderate to large pericardial effusion with or without tamponade physiology based on standard echocardiographic criteria were studied.

Exclusion Criteria: The exclusion criteria were patients with (i) known cases of malignancy (ii) post pericardiotomy syndrome (iii) multi-system disorder (iv) insufficient clinical data (iv) those not able to provide written informed consent.

Ethical Approval & Consent: The study was approved by the Institutional Ethics Committee. All patients provided informed consent for data collection and analysis for the research purposes, which is the practice at our hospital, irrespective of any study to be conducted in future.

Strategy for Collection & Working definition: The diagnosis of pericardial effusion and tamponade was made according to standard two-dimensional echocardiographic criteria (3). Pericardial effusion was graded as moderate (10–20 mm) or severe effusion (>20 mm) according to the size of the echo-free space. The cause of pericardial effusion was evaluated by a battery of tests. These included blood count, serum electrolytes, renal function tests, erythrocyte sedimentation rate (ESR), tuberculin skin test, thyroid profiling, antinuclear antibodies (ANA) test, rheumatoid factor test, and QuantiFERON TB-GOLD (QFT) test. Radiological investigations included chest x-ray and chest computed tomography (or magnetic resonance imaging if CT was contraindicated). Pericardial fluid was analyzed for cells, proteins, lactate dehydrogenase (LDH), malignant cells, adenosine deaminase (ADA), polymerase chain reaction (PCR) for mycobacterium tuberculosis, gram staining, acid-fast bacillus (AFB) staining and cultures. Pericardiocentesis was performed. Final diagnosis of pericardial effusion was based on clinical history, examination and specific laboratory investigations for tuberculosis, hypothyroidism, malignancy, uremia and collagen vascular disease. The diagnosis of tubercular pericardial effusion was based on presence of lymphocytic predominant pericardial fluid along with positive ADA (cut off value >40UL with 100% sensitivity and 94.6% specificity), or by TB PCR/CB NAAT, presence of active tuberculosis elsewhere in the body.

Data Analysis: Continuous variables are presented as mean ± standard deviation, while categorical variables are presented as frequency and percentages. All data was analyzed with the Statistical Package for Social Sciences (SPSS; Chicago, IL, USA) program, version 15.

Results

Demographic and clinical presentation of overall study population: A total of 6,000 patients presented to our tertiary-care centre between the study duration of August 2016 to July 2017. Of these patients, 71 patients were diagnosed with pericardial effusion. Hence, the incidence of pericardial effusion with or without tamponade was 1.1% at our center. However, one patient was a known case of malignancy and was therefore excluded. Thus, our study comprised 70 patients aged 13 to 83 years. Mean age of the study population was 46.87±14.40. Frequencies of men 36 (51.4%) and women 34 (48.6%) were almost equal. The most prevalent cardiovascular risk factor was oral tobacco use followed by diabetes, smoking, hypertension, and alcohol intake present in 11 (15.7%), 10 (14.3%), 8 (11.4%), 8 (11.4%) and 3 (4.3%) patients, respectively. Raised jugular venous pressure, breathlessness, tachypnea, and tachycardia defined as heart rate (HR) >100 beats per minute (bpm) were the most observed clinical presentations observed in 39 (55.7%), 36 (51.4%), 33 (47.1%), and 33 (47.1%) patients, respectively. Other less observed symptoms included weakness, decreased urine output, weight loss, abdominal distension, body swelling, and palpitations. Joint pain, lupus nephritis, history of tuberculosis, rigor & chills, vomiting, and hemoptysis were uncommon being observed in 1 (1.4%) patient each. Demographics and clinical

presentation of the study population are detailed in (Table 1). The cardiovascular risk factors are illustrated in (Figure 1).

Etiological Diagnosis of overall study population: Of the 70 patients, majority of the patients–32 (44.4%) were diagnosed with tubercular effusion. More than a quarter patient, 26.4% patients were diagnosed with hypothyroidism. Idiopathic, malignancy, myocardial infarction (MI), bacterial infection, human immunodeficiency virus (HIV) infection, and ANA+ was the diagnosis made in 6 (8.3%), 5 (6.9%), 3 (4.1%), 3 (4.1%), 2 (2.7%), and 2 (2.7%) patients, respectively Two patients had tuberculosis as well as HIV. The diagnosis of the overall study population is demonstrated in (Figure 2).

Clinical, biochemical and echocardiographic profile of overall study population: Mean heart rate was 104.7±15.7 bpm. Mean systolic and diastolic blood pressure (BP) was 107.1±17.0 mmHg and 70.8±8.2 mmHg, respectively. Mean value of serum protein, serum albumin, serum urea and serum creatinine for the study population was 5.47±0.74 mg/dL, 2.84±0.34 mg/dL, 44.83±24.92 mg/dL, and 1.26±1.65 mg/dL respectively. Mean ESR was 34.71±20.34 mm/h. Echocardiography revealed more than three-quarter—54 (77.1%) patients had severe pericardial effusion. Seventeen (24.3%) patients had tamponade diagnosed through clinical and echocardiographic evaluation. The biochemical and echocardiographic findings are given in (Table 2).

Demographic and clinical Profile of study population stratified according to etiology: Mean age was significantly higher for tubular effusion patients (50.5±12.6) as compared to hypothyroidism patients 40.8±9.2 (p=0.030). We analyzed the study population according to the underlying etiology. Males contributed 18 (56.3%), 8 (42.1%), and 10 (52.6%) patients with an etiology of tubercular effusion, hypothyroidism, and other etiologies, respectively. Tobacco smokers accounted for 6 (18.8%) patients of tubular effusion etiology. Smoking was the leading cardiovascular risk factor in patients with an etiology of hypothyroidism. Pericardial effusion due to other etiologies comprised of 2 diabetics, 2 smokers, 2 tobacco users, and 2 hypertensives. Twenty (62.58%) patients that presented with raised jugular venous pulse were diagnosed with tubular effusion. Ten (52.6%) patients that experienced tachypnea were diagnosed with hypothyroidism. Tachycardia observed in 12 (63.2%) patients had a diagnosis other than tubular effusion or hypothyroidism. Demographic and clinical presentation details of the study population according to underlying etiology are detailed in (Table 3).

Biochemical and echocardiographic investigations according to etiology and diagnosis: Serum protein (p=0.013) and serum creatinine (p<0.001) levels showed statistical significance across differing etiologies. All patients diagnosed with hypothyroidism displayed total leucocyte count (TLC) >5000 and thyroid stimulating hormone (TSH) levels >4.5. TSH ranges were statistically significant (p<0.001) across differing etiologies. Eight of the 17 patients that developed tamponade had a tubular effusion etiology. The biochemical and echocardiographic investigations according to etiology are detailed in (Table 4).

Discussion

The etiology of pericardial effusion varies according to geographical location, the population studied and underlying diseases. Etiology is further influenced by diagnostic methods and modalities used (4). The present study retrospectively reviewed the clinical presentation, diagnosis and etiology of pericardial effusion in patients admitted to the cardiology emergency department of our tertiary-care centre over the period of one year.

India suffers from a burden of oral tobacco use. The prevalence of smokeless tobacco i.e. tobacco chewers in the country is a staggering 164 million (5). Furthermore, India alone contributes an estimated 74% of the global burden of death from chewing tobacco (6). Therefore, it is not surprising that our findings revealed tobacco use (15.7%) as a cardinal risk factor for pericardial effusion.

In the present study the most common signs/symptoms were raised jugular venous pulse (55.7%), breathlessness (51.4%), tachypnea (47.1%), and tachycardia (HR >100 bpm) (47.1%). The studies from Kashmir (7), and Bihar (8) both reported tachycardia followed by breathlessness as the most observed clinical features. Rarely experienced symptoms of pericardial effusion include hiccups, hoarse voice, dysphagia or nausea (7).

Some authors have suggested age-specific etiologies (7). However, the findings from our study were not restricted to an adult population. A study comprising a child population also reported tuberculosis as the leading etiology in 7/17 children (9). Another study by Bagri et al. (10) reported tuberculosis in 24.0%

children. The study also stated that all children experienced tachypnea and tachycardia, whereas as more than a third children had raised jugular venous pressure. Thus, as our study also observed these findings, we cannot support the assumption of age-specific etiologies or clinical presentations.

Current literature has outlined different trends in etiological profiles of pericardial effusion between developed Western countries and still developing African and Asian countries. We observed that the most common etiological factor of pericardial effusion was tubercular effusion (44.4%). Our study may be compared to similar studies also conducted in North India. Studies conducted in Kashmir (7) and Bihar (8) similarly revealed tuberculosis as the leading etiological factor with prevalence of 24.5% and 27.3%, respectively. These findings emphasize the high prevalence of tuberculosis in these Indian regions. In contrast, Western countries report malignancy as the principal etiological factor (11).

We performed further analysis to assess the overall data according to tubular effusion, hypothyroidism, and other etiological causes. Such an analysis can be compared to the Bihar (8) study in pericardial effusions were grouped according to symptoms such as shortness of breath, fever, and cough. In their study only 1 (33.3%) patient with a diagnosis of hypothyroidism presented with cough, whereas in our study as many as 8 (42.1%) patients presented with cough. No patients with hypothyroidism experienced fever, whereas in our study 3 (15.8%) patients experienced fever. Our study also found serum albumin differed significantly among the groups. A previous study by Bataille et al. (12) proved serum albumin to be a predictor of risk for pericardial drainage. Rate of drainage was 35% and 7% when albuminemia was ≤31 g/l and >31 g/l., respectively. Similarly, Jung et al. (13) concluded patients uninfected with HIV but diagnosed with tuberculosis were more prone to unfavorable outcomes when they presented with low serum albumin levels.

Tuberculosis is often associated with HIV infection, especially in sub-Saharan Africa (14). Many Indian studies currently report low incidences of HIV infection. Hence this correlation cannot be proven from such studies yet.

Conclusion

Our study results demonstrate tuberculosis as the most frequent etiology of pericardial effusion followed by hypothyroidism and malignancy. High prevalence of tuberculosis in India is attributable to poor socioeconomic status, overcrowding and increased occurrence of HIV. We therefore recommend that society be educated on the importance of personal hygiene. Awareness programmes can be started to educate people of the symptoms of tuberculosis. They should be urged to consult a physician as soon as possible and not neglect symptoms. Lastly, awareness should be raised to spread information about HIV and its prevention.

Limitation of the study

The study is limited firstly by the small sample size. These results reflect clinical presentation and etiology of pericardial effusion in a specific region of India and hence may not be necessarily be generalized. Mild & minimal forms of pericardial effusion which did not warrant an emergency consultation may have been missed in the study.

Relevance of the study

Despite these drawbacks, the current study contributes to existing literature. It not only reports overall prevalence of pericardial effusion but also reports prevalence according to the underlying etiological cause. Furthermore, this study analyzed a large number of clinical and biochemical variables that have not previously been reported in this geographical region. This data should be especially useful to physicians treating patients residing in regions suffering from dual epidemics of tuberculosis and HIV.

Authors Contribution

AP & AS: conceived the project. SK & AS: were instrumental in data collection. SK & AP: prepared the manuscript. DH & RS: critically reviewed the manuscript. AP: submitted the manuscript & also submitted the revised version.

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Tables

TABLE 1 DEMOGRAPHICS AND CLINICAL PRESENTATION

Variables	n=70
Age, mean ± SD (years)	46.87±14.40
≤45 years, n (%)	34 (48.6%)
>45 years, n (%)	36 (51.4%)
Gender	
Male, n (%)	36 (51.4%)
Female, n (%)	34 (48.6%)
Predominant signs/ symptoms	
Raised jugular venous pulse, n (%)	39 (55.7%)
Breathlessness, n (%)	36 (51.4%)
Tachypnea, n (%)	33 (47.1%)
Tachycardia (HR >100 bpm), n (%)	33 (47.1%)
Fever, n (%)	23 (32.9%)
Hypotension (systolic BP <90 mmHg), n (%)	20 (28.6%)
Cough, n (%)	12 (40.0%)
Loss of appetite, n (%)	11 (15.7%)
Pedal edema, n (%)	9 (12.9%)
Chest pain, n (%)	7 (10.0%)
Other signs/symptoms	
Weakness, n (%)	7 (10.0%)
Decreased urine output, n (%)	7 (10.0%)
Weight loss, n (%)	5 (7.1%)
Abdominal distension, n (%)	2 (2.9%)
Body swelling, n (%)	2 (2.9%)
Palpitations, n (%)	2 (2.9%)
Joint pain, n (%)	1 (1.4%)
Lupus nephritis, n (%)	1 (1.4%)
History of tuberculosis, n (%)	1 (1.4%)
Rigor & chills, n (%)	1 (1.4%)
Vomiting, n (%)	1 (1.4%)
Hemoptysis, n (%)	1 (1.4%)
HR-heart rate, bpm-beats per minute, BP-blood pressure	

TABLE 2 BIOCHEMICAL AND ECHOCARDIOGRAPHIC INVESTIGATIONS

Variables	n=70
Heart rate, mean ± SD (bpm)	104.7±15.7
Systolic BP, mean ± SD (mmHg)	107.1±17.0
Diastolic BP, mean ± SD (mmHg)	70.8±8.2
Biochemical tests	
Serum protein, mean ± SD (g/dl)	5.47±0.74
<6 g/dl, n (%)	51 (72.9%)
6–8 g/dl, n (%)	19 (27.1%)
>8 g/dl, n (%)	0 (0.0%)
Serum albumin, mean ± SD (g/dl)	2.84±0.34
<3.5 g/dl, n (%)	69 (98.6%)
3.5–5.5 g/dl, n (%)	1 (1.4%)
>5.5 g/dl, n (%)	0 (0.0%)
Serum urea, mean ± SD (g/dl)	44.83±24.92
Serum creatinine, mean ± SD (mg)	1.26±1.65
<0.6 mg, n (%)	2 (2.9%)
0.6–1.2 mg, n (%)	55 (78.6%)
>1.2 mg, n (%)	13 (18.6%)
TLC, mean ± SD (n)	8314.57±2873.11
<4000, n (%)	2 (2.9%)
4000–10,000, n (%)	55 (78.6%)
>10,000, n (%)	13 (18.6%)
TSH, mean ± SD (n)	5.21±2.91
<4.5, n (%)	42 (60.0%)
4.5–10, n (%)	28 (40.0%)
>10, n (%)	0 (0%)
ESR, mean ± SD (mm/h)	34.71±20.34
Male, 1–13 mm/h, n (%)	1 (1.4%)
>13 mm/h, n (%)	35 (50.0%)
Female, 1–20 mm/h, n (%)	12 (17.1%)
>20 mm/h, n (%)	21 (30.0%)
Troponin T, mean ± SD (unit)	0.06±0.14
PFA TLC	1354.9±2847.3
PFA N	22.9±17.4
PFA L	88.7±99.7
ADA	48.8±34.6
Echocardiography	
Severe pericardial effusion (>20 mm), n (%)	54 (77.1%)
Moderate pericardial effusion (10–20 mm), n (%)	16 (22.9%)
Tamponade, n (%)	17 (24.3%)
Bpm-beats per minute, BP-blood pressure, TLC-total leukocyte count, TSH-thyroid stimulating hormone, ESR-erythrocyte sedimentation rate, PFA-pericardial fluid analysis, ADA- adenosine deaminase	

TABLE 3 DEMOGRAPHICS AND CLINICAL PRESENTATION

Variables	Tubular effusion n=33	Hypothyroidism n=19	Other etiologies n=18	p value
Age, mean ± SD (years)				
≤45 years, n (%)	12 (37.5%)	13 (68.4%)	9 (47.4%)	0.101
>45 years, n (%)	20 (62.5%)	6 (31.6%)	10 (52.6%)	
Gender				
Male, n (%)	18 (56.3%)	8 (42.1%)	10 (52.6%)	0.616
Female, n (%)	14 (43.8%)	11 (57.9%)	9 (47.4%)	

Cardiovascular risk factors				
Diabetes, n (%)	5 (15.6%)	3 (15.8%)	2 (10.5%)	0.915
Smoker, n (%)	2 (6.3%)	4 (21.1%)	2 (10.5%)	0.309
Tobacco, n (%)	6 (18.8%)	3 (15.8%)	2 (10.5%)	0.738
Hypertension, n (%)	3 (9.4%)	3 (15.8%)	2 (10.5%)	0.889
Alcohol, n (%)	2 (6.3%)	0 (0.0%)	1 (5.3%)	0.789
Signs/symptoms				
Breathlessness, n (%)	17 (53.1%)	8 (42.1%)	11 (57.9%)	0.602
Fever, n (%)	11 (34.4%)	3 (15.8%)	9 (47.4%)	0.113
Cough, n (%)	8 (25.0%)	0 (0.0%)	3 (15.8%)	0.060
Loss of appetite, n (%)	6 (18.8%)	1 (5.3%)	4 (21.1%)	0.333
Chest pain, n (%)	1 (3.1%)	2 (10.5%)	4 (21.1%)	0.132
Tachypnea, n (%)	15 (46.9%)	10 (52.6%)	8 (42.1%)	0.809
Tachycardia (HR>100 bpm), n (%)	14 (43.8%)	7 (36.8%)	12 (63.2%)	0.233
Raised jugular venous pulse, n (%)	20 (62.5%)	8 (42.1%)	11 (57.9%)	0.357
Hypotension (systolic BP<90 mmHg), n (%)	8 (25.0%)	6 (31.6%)	6 (31.6%)	0.832
Pedal edema, n (%)	5 (15.6%)	1 (5.3%)	3 (15.8%)	0.655
Other signs/symptoms				
Weight loss, n (%)	3 (9.4%)	0 (0.0%)	2 (10.5%)	0.508
Weakness, n (%)	3 (9.4%)	1 (5.3%)	3 (15.8%)	0.684
Decreased urine output, n (%)	2 (6.3%)	2 (10.5%)	3 (15.8%)	0.532
Abdominal distension, n (%)	1 (3.1%)	0 (0.0%)	1 (5.3%)	1.000
Body swelling, n (%)	2 (6.3%)	1 (5.3%)	0 (0.0%)	0.789
Palpitations, n (%)	0 (0.0%)	0 (0.0%)	2 (10.5%)	0.142
Joint pain, n (%)	0 (0.0%)	1 (5.3%)	1 (5.3%)	0.291
Lupus nephritis, n (%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0.543
History of tuberculosis, n (%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0.543
Rigorous Chills, n (%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0.543
Vomiting, n (%)	0 (0.0%)	0 (0.0%)	1 (5.3%)	0.543
Hemoptysis, n (%)	1 (3.1%)	0 (0.0%)	0 (0.0%)	1.000
HR-heart rate, bpm-beats per minute, BP-blood pressure				

TABLE 4 ETIOLOGICAL/DIAGNOSTIC-WISE BIOCHEMICAL AND ECHOCARDIOGRAPHIC INVESTIGATIONS

Variables	Tubular effusion n=33	Hypothyroidism n=19	Other etiology n=19	p value
Age, mean ± SD (years)	50.5±12.6	40.8±9.2	46.8±19.3	0.030
Heart rate, mean ± SD (bpm)	103.4±13.6	104.6±18.2	107.2±16.8	0.413
Systolic BP, mean ± SD (mmHg)	104.6±14.6	106.8±14.4	111.5±22.4	0.580
Diastolic BP, mean ± SD (mmHg)	69.6±7.5	71.9±7.6	71.7±9.9	0.485
Biochemical tests				
Serum protein, mean ± SD (g/dl)				
<6 g/dl, n (%)	26 (81.3%)	9 (47.4%)	16 (84.2%)	0.013
6–8 g/dl, n (%)	6 (18.8%)	10 (52.6%)	3 (15.8%)	
>8 g/dl, n (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Serum albumin, mean ± SD (g/dl)				
<3.5 g/dl, n (%)	33 (100.0%)	18 (94.7%)	19 (100.0%)	0.543
3.5–5.5 g/dl, n (%)	0 (0.0%)	1 (5.3%)	0 (0.0%)	
>5.5 g/dl, n (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
Serum creatinine, mean ± SD (mg)				
<0.6 mg, n (%)	0 (0.0%)	1 (5.3%)	1 (5.3%)	<0.001
0.6–1.2 mg, n (%)	30 (93.8%)	17 (89.5%)	8 (42.1%)	
>1.2 mg, n (%)	2 (6.3%)	1 (5.3%)	10 (52.6%)	
TLC, mean ± SD (n)				

<800, n (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	0.215
800–5000, n (%)	5 (15.6%)	0 (0.0%)	2 (10.5%)	
>5000, n (%)	27 (84.4%)	19 (100.0%)	17 (89.5%)	
TSH, mean ± SD (n)				<0.001
<0.4, n (%)	0 (0.0%)	0 (0.0%)	0 (0.0%)	
0.4–4.5, n (%)	26 (81.3%)	0 (0.0%)	18 (94.7%)	
>4.5, n (%)	6 (18.8%)	19 (100.0%)	1 (5.3%)	
ESR, mean ± SD (mm/h)				0.079
Male, 1–13 mm/h, n (%)	0 (0.0%)	1 (5.3%)	1 (5.3%)	
>13 mm/h, n (%)	18 (56.3%)	8 (42.1%)	9 (47.4%)	
Female 1–20 mm/h, n (%)	1 (3.1%)	6 (31.6%)	5 (26.3%)	
>20 mm/h, n (%)	13 (40.6%)	4 (21.1%)	4 (21.1%)	
Troponin T (mean ± SD)	0.03±0.03	0.1±0.3	0.04±0.06	0.662
PFA TLC	1064.1±1248.6	1212.6±894.7	2105.6±5539.1	0.171
PFA N	20.3±11.5	24.1±19.2	26.8±24.1	0.943
PFA L	105.9±140.5	75.5±19.3	68.8±25.1	0.456
ADA	75.3±32.1	34.4±15.4	18.7±12.8	<0.001
Cardiomegaly on chest x-ray, n (%)	0 (0%)	1 (5.3%)	1 (5.3%)	0.291
Echocardiography				
Severe pericardial effusion (>20 mm), n (%)	25 (78.1%)	15 (78.9%)	14 (73.7%)	
Moderate pericardial effusion (10–20 mm), n (%)	7 (21.9%)	4 (21.1%)	5 (26.3%)	0.913
Tamponade (clinical + echo), n (%)	8 (25.0%)	4 (21.1%)	5 (26.3%)	0.923
Bpm-beats per minute, BP-blood pressure, TLC-total leukocyte count, TSH-thyroid stimulating hormone, ESR-erythrocyte sedimentation rate, PFA-pericardial fluid analysis, ADA- adenosine deaminase				

Figures

FIGURE 1 CARDIOVASCULAR RISK FACTORS OF OVERALL STUDY POPULATION

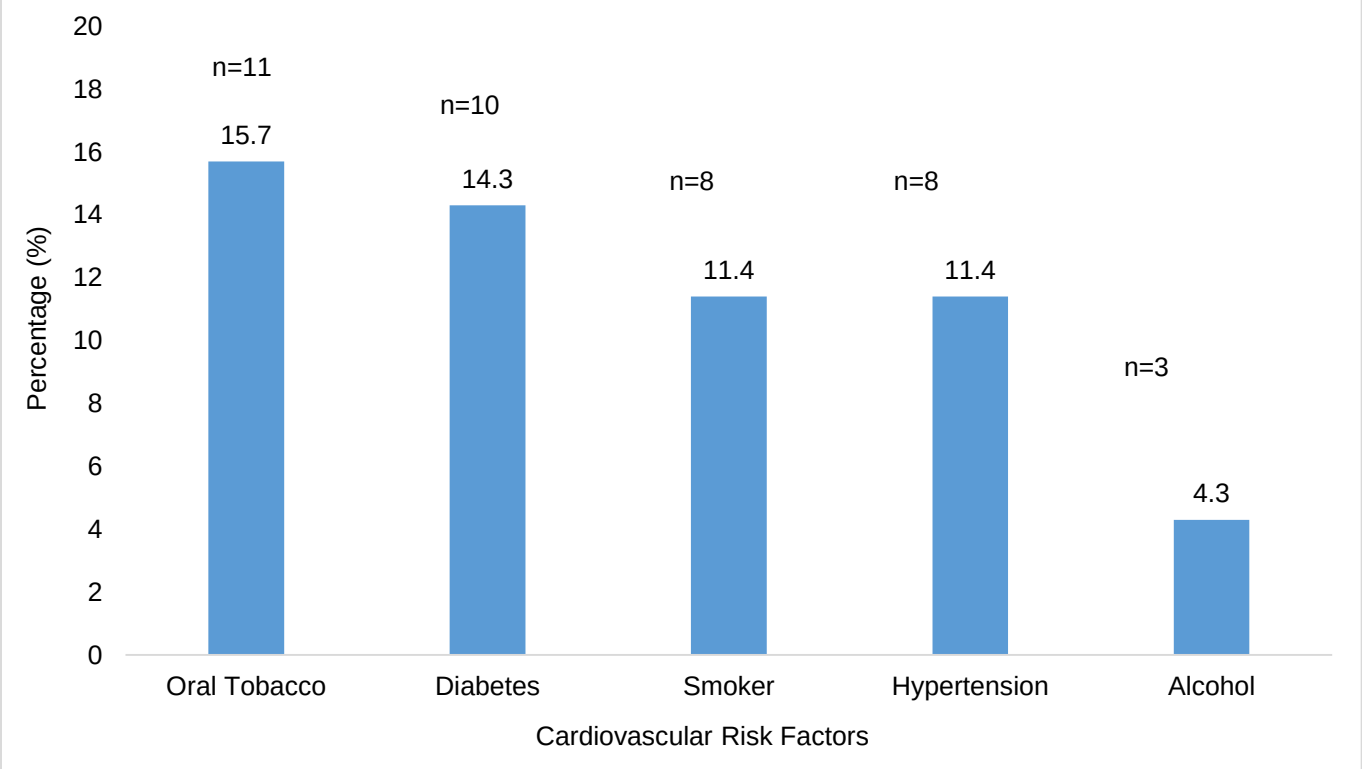
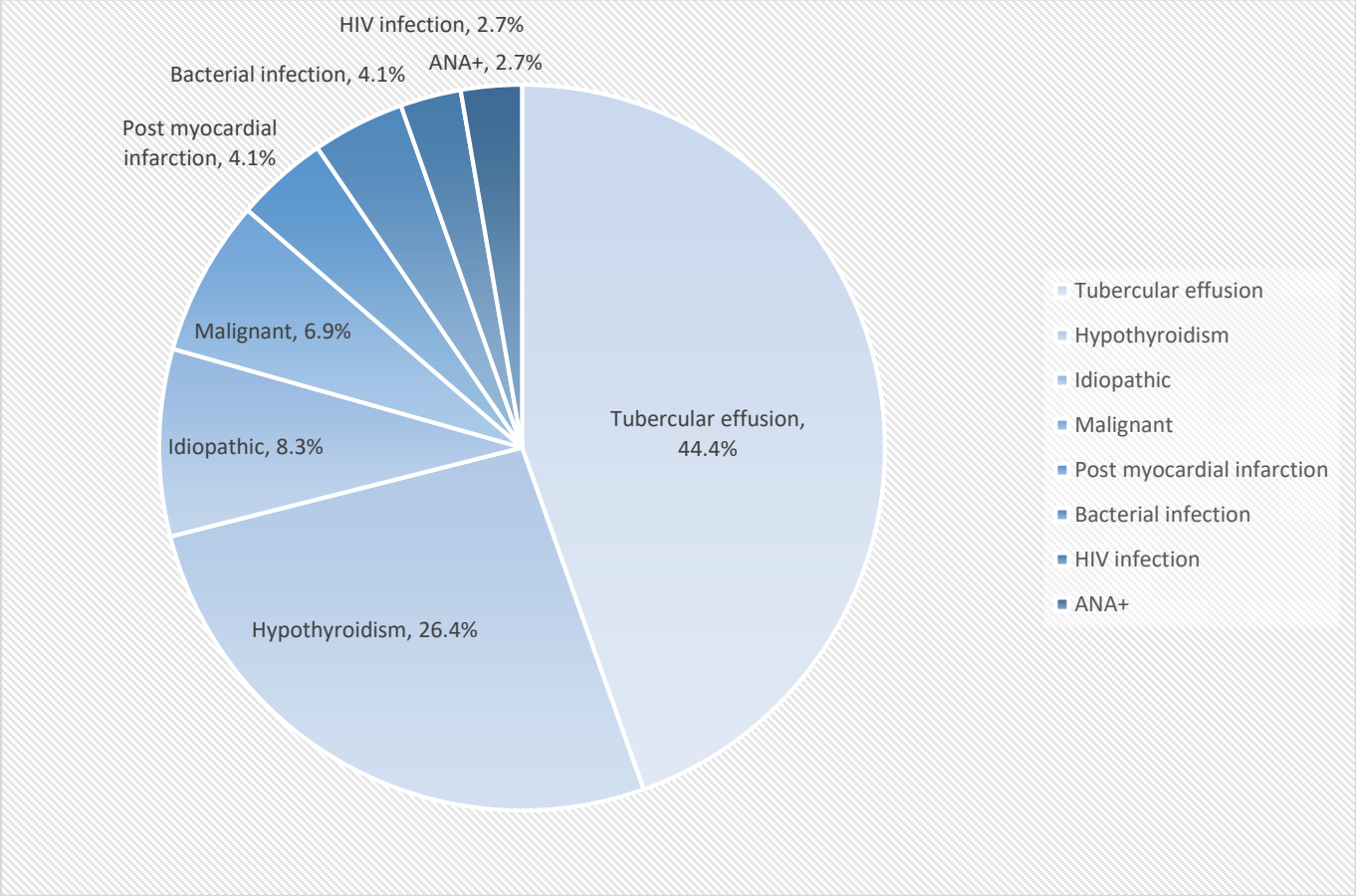


FIGURE 2 ETIOLOGICAL DIAGNOSIS OF OVERALL STUDY POPULATION



[ANA- antinuclear antibodies]