

Prevalence, Clinical and Epidemiological Characteristics of Acute Pericarditis in Two Reference Hospitals of Cameroon

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Abstract

Background: Tough rare in sub Saharan Africa, acute pericarditis is associated to an important diseases morbidity and mortality. However, few data are available on this topic in our context. We aimed to describe epidemiological aspects of acute pericarditis in two reference hospitals of Cameroon.

Methods: This was a cross-sectional study with retrospective data collection covering a period of five years from January 2012 to April 2017, conducted in cardiology department of two reference hospitals namely Yaoundé Central Hospital and Yaoundé General hospital of Cameroon. We included records of patients admitted/hospitalized with a diagnosis of acute pericarditis during the study period.

Results: The prevalence of pericarditis among hospitalized patients in cardiology units was 1.74%. Acute pericarditis represented 1.67% of admission in cardiology department. Most of patients consulted for dyspnea and/or chest pain. The most frequent findings on physical examination was tachycardia and deafening of heart sounds. Positive HIV serology was found 35.48% of cases while 22.2% of sputum examination were positive for tuberculosis. On echocardiography, 90% patients presented a pericardial effusion. Aetiologies were dominated by idiopathic/viral followed by tuberculosis and HIV. The average hospitalization duration was 17 days (3 to 57 days). 27.4% of patients died during hospitalization.

Conclusion: Pericarditis is associated usually has atypical presentation with an important mortality in our context.

Keywords: Acute Pericarditis; Prevalence, Presentation

Introduction

Pericarditis is the inflammation of the double-layered pericardial sac with the possible increased production of pericardial fluid as exudate [1]. It is the most frequent form of pericardial disease, and a relatively common cause of chest pain in clinical settings [2]. Acute pericarditis responsible for approximately 5% of emergency department presentations of non-ischemic chest pain in developed countries [3]. It is associated with significant disease morbidity and mortality in Africa despite a seemingly adequate treatment. The aetiological

diagnoses are numerous and vary according to the epidemiology of the human immunodeficiency virus (HIV) infection and available diagnosis methods. The aetiology of pericarditis can be either be infectious or non-infectious in nature [4]. However, most cases are labelled as 'idiopathic'; majority of which are presumed to be of viral origin, especially in countries with low prevalence of HIV. On the other hand, non-infectious pericarditis mainly includes autoimmune systemic diseases, post-pericardiotomy syndromes and neoplastic pericardial disease [3]. In western world, most cases of acute pericarditis are idiopathic [5]. By contrast, tuberculosis is responsible for about 70 - 80% of cases of pericarditis in sub-Saharan Africa; with up to 90% of the cases associated with HIV infection [5-7]. The epidemiological features of acute pericarditis are important for an adequate management both for aetiological diagnosis, prognostic. However, in contrast to coronary artery disease, heart failure, valvular disease, and other topics in the field of cardiology, few data are available on pericardial diseases especially in sub-Saharan Africa [1]. In order to bridge this knowledge gap, we reported on prevalence, clinical and paraclinical aspects of acute pericarditis in two reference hospitals in Cameroon.

Material and Methods

Study design and sampling

This was a cross-sectional study with retrospective data collection covering a period of five years from January 2012 to April 2017. The study was conducted at the cardiology unit of two reference (teaching) hospitals in Cameroon, namely: The Yaoundé Central Hospital and Yaoundé General Hospital. All patients admitted for acute pericarditis were identified and their records were searched in archives. We included all patient records (cases) hospitalized with a diagnosis of acute pericarditis confirmed by cardiac ultrasound during the study period and presenting clinical and paraclinical data. Patients files lacking echocardiographic results were excluded.

Data collection and procedure

Hospitalization registers were searched, and all the patients hospitalized for pericarditis identified. Then, their files were screened for eligibility criteria and those presenting a diagnosis of acute pericarditis were included. Data extracted from patient records were socio-demographic data, clinical findings (review of systems and physical examination); paraclinical investigations (Biology, imaging) as well as aetiologies and outcomes. Only patients with a final diagnosis of acute pericarditis confirmed by a senior consultant were considered for analysis.

Data analysis

Data entry was done using Epi data software version 3.1 and analyzed by using the Statistical Package for Social Sciences (SPSS), version 21.0. (Armonk, NY: IBM Corp.). Qualitative variables were summarized as frequencies and percentages while quantitative data were presented as mean with their corresponding standard deviation.

Results

Overall, 4652 patients were admitted in cardiology departments of the two references hospitals during the study period. Eighty-one patients were diagnosed with pericarditis (1.74% of hospitalization). Acute pericarditis represented 1.67% (78 cases) of all admissions into the cardiology unit. Among cases of acute pericarditis, only 65/78 patient records could be found and three (03) were excluded due to the absence of data on the outcome. Thus 62/78 met our inclusion criteria and were therefore included in the final analysis (Figure 1).

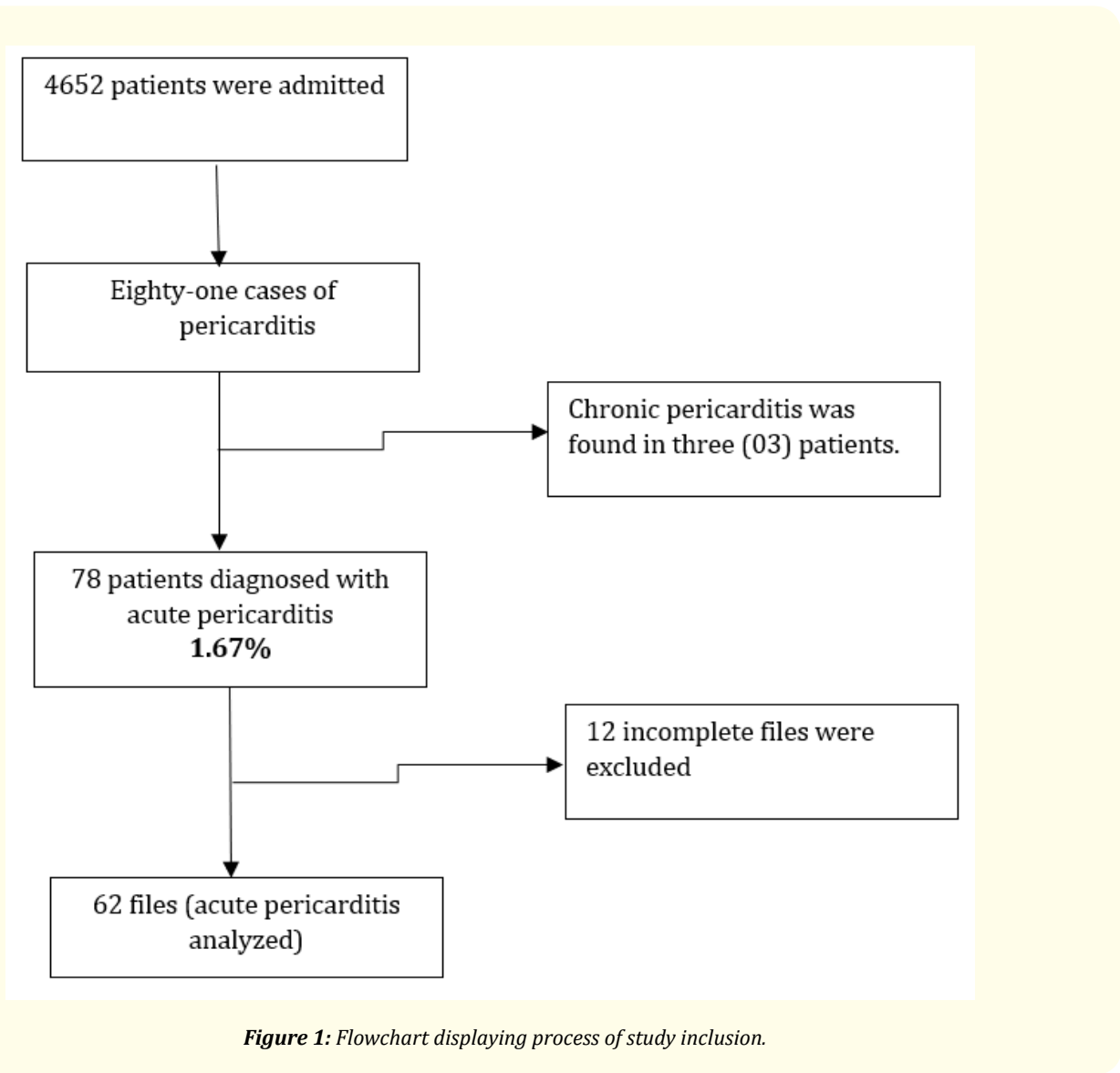


Figure 1: Flowchart displaying process of study inclusion.

Participants’ characteristics

Of the 62 patients included in the analysis, 58.1% were females and the mean age of our population was 43 ± 12 years and ranged from 14 to 65 years. The major presenting complaint on admission was dyspnoea found in (58.1%) patients, followed by chest pain in (35.5%) patients and cough eight (12.9%) patients. The commonest comorbidities were: HIV (29%), tuberculosis 9.7%, cancer (9.7%) and heart failure (9.7%). Review of systems (Figure 2) revealed that the most frequent symptoms at admission were cough in 83.9%, precordial pain (77.4%) and dyspnoea (77.4%). Dyspnoea was classified grade IV in most cases (45.8%) according to the NYHA.

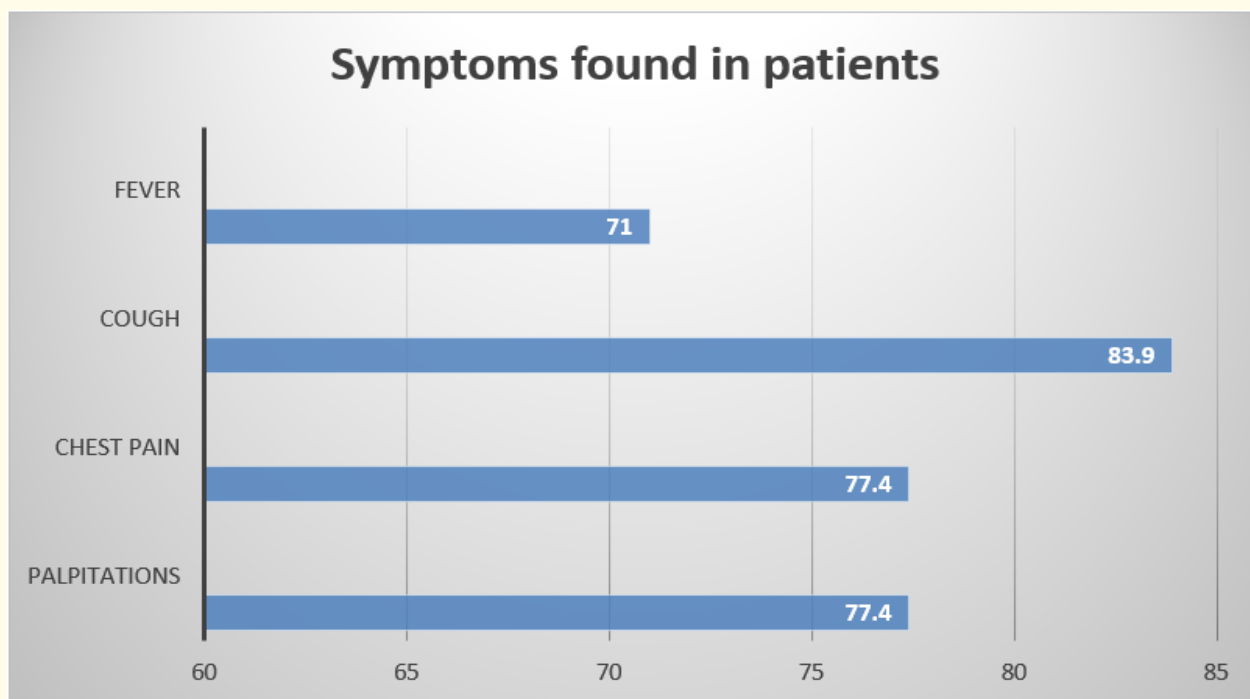


Figure 2: Main presenting symptoms of patients diagnosed with acute pericarditis.

Physical examination

The array of physical signs was dominated by tachycardia (61.3%) and muffled heart sounds (58.1%). Pericardial rub was found only in 29% of the cases (Table 1).

Physical signs	Frequencies	Percentage (%)
Ascites	20	32.3
Tachycardia	38	61.3
Muffling of heart sounds	36	58.1
Pericardial rub	18	29
Hepatomegaly	20	32.3
Paradoxical pulse of Kussmaul's	1	1.6
Oedema of the lower limbs	24	38.7
Crackling rattles	22	35.5
Hepatojugular reflux	22	35.5
Pericardial tamponade	20	32.3
Distended jugular veins	24	38.7
Heart murmur	2	3.2

Table 1: Physical signs presented by patients with acute pericarditis.

Paraclinical investigations

Biological workup

Concerning biological investigations, 45.16% had a Cytobacteriological analysis of pericardial effusion. Among these latter, a germ was isolated only in 14.3% of cases. The predominant germ was *Staphylococcus aureus* found in three cases. 35.48% of our patients were positive for HIV while 22.2% of sputum analysis were positive for tuberculosis. Patients positive for HIV test and presenting a positive sputum analysis in absence of another cause of pericarditis were labelled as tuberculous pericarditis.

Imaging

In our sample, 90.32% patients had a chest x-ray of our study population, 77.42% had an electrocardiogram. On chest X-ray, cardiomegaly was the most frequent abnormality reported in 42.9% of patients (Figure 3). On the other hand, electrocardiogram found a low voltage in 54.2% of patients. Frequencies of X-ray and ECG signs are summarized on figure (Figure 4). On echocardiography, pericardial effusion was found in 90.3% of our study population. Echocardiographic findings are summarized on figure 5.

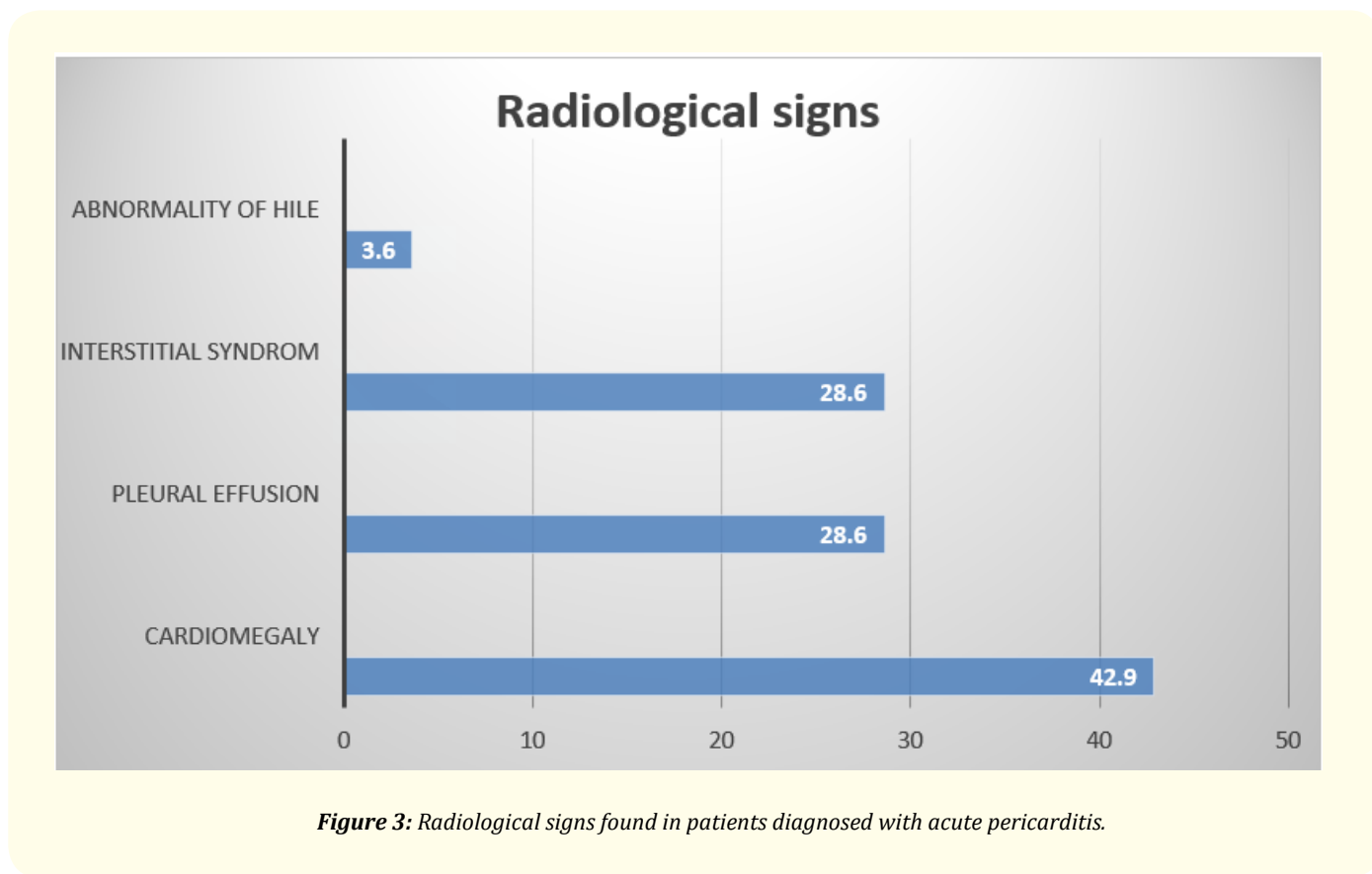


Figure 3: Radiological signs found in patients diagnosed with acute pericarditis.

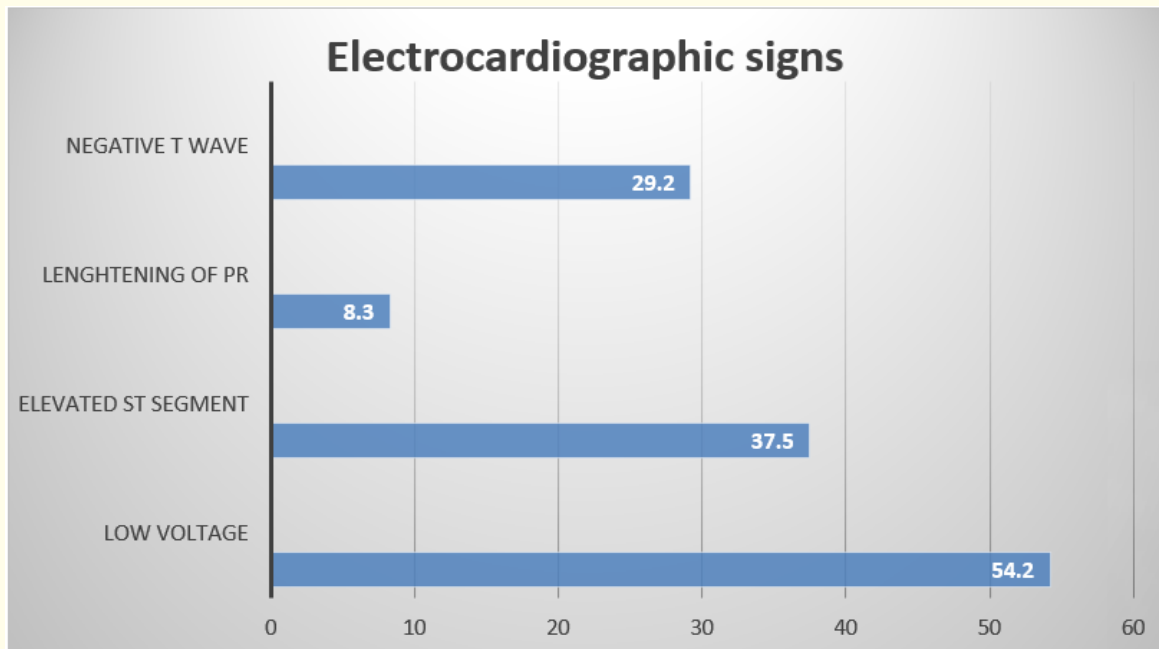


Figure 4: Electrocardiographic signs found in patients diagnosed with acute pericarditis.

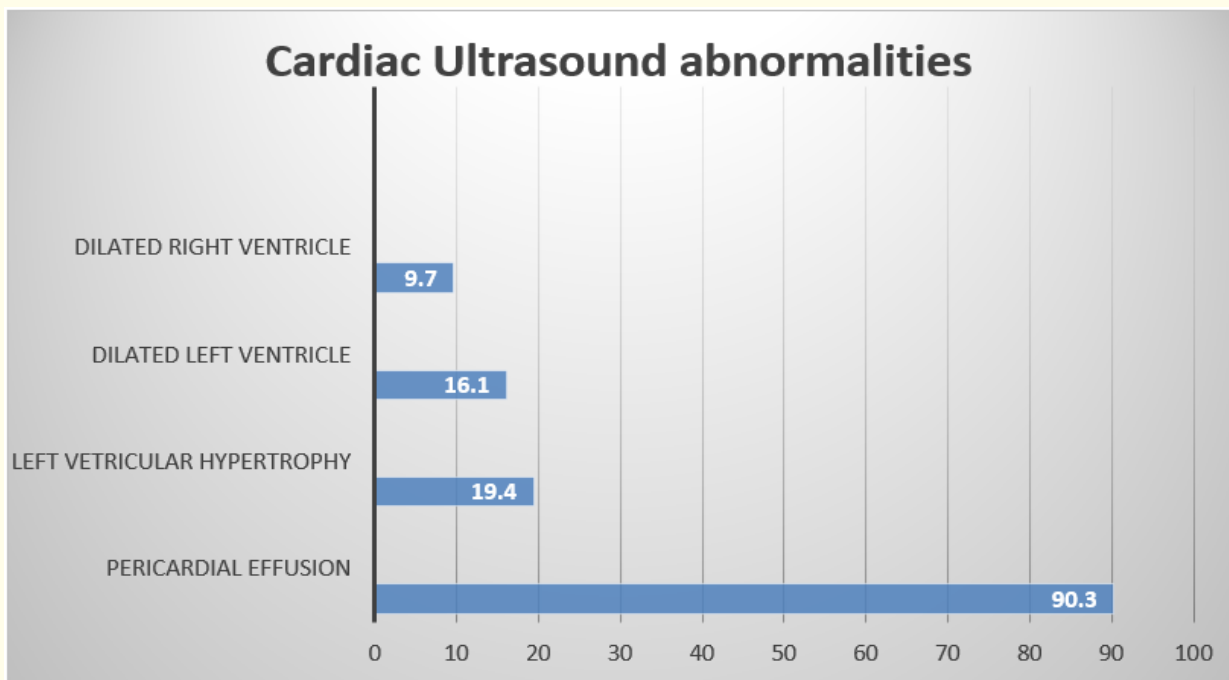


Figure 5: Cardiac ultrasound abnormalities found in patients with acute pericarditis

Aetiologies and outcomes of acute pericarditis (Table 2)

The aetiology of acute pericarditis in our context was mostly idiopathic (53.23%), followed by tuberculosis (16.1%) and HIV (13.1%). The average hospitalization duration was 17 days with a minimum of 3 days and a maximum of 57 days. Death rate was 27.4% in our sample.

Aetiologies	Frequency (N = 62)	Percentage
Idiopathic/viral	33	53.2
HIV/AIDS	8	13
Tuberculosis	10	16.1
Neoplasia	2	3.2
Aortic Dissection	1	1.6
Uremic pericarditis	4	6.5

Table 2: Aetiologies of pericarditis in our study population.

HIV/AIDS: Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome.

Discussion

This study was carried out to determine the epidemiological profile of acute pericarditis in two reference hospitals in Cameroon. We found that acute pericarditis represented 1.67% of admission in cardiology departments. The most frequent presenting complaints were dyspnoea and chest pain and clinical evaluation mostly showed a tachycardia and muffled heart sounds. Echocardiographic findings were dominated by pericardial effusion and pericardial thickening. In addition, chest X-ray usually reported a cardiomegaly and from the few bacteriological analysis done, a positive exam was found only in 14.3% of cases with *Staphylococcus aureus* being the most frequent germ in our sample. A positive HIV serology was found 35.48% while 22.2% of sputum examination were positive for tuberculosis. The aetiologies were dominated by idiopathic/viral and more than one quarter of patients died during hospitalization. Pericarditis remains uncommon among hospitalized patients of cardiology departments of reference hospitals in Yaoundé affecting less than 2% of these patients. The prevalence found in this study is similar to the 1.7 and 2% admission rates reported from studies conducted in Mali and Togo, respectively [8,9]. However, our findings are significantly lower than that of Jingi., *et al.* in 2013 in the West Region of Cameroon, where acute pericarditis accounted for 7.0% of cardiovascular diseases [10]. This very high frequency in their study would be related to their source population which consisted only of the subjects having performed an echocardiography contrary to ours which included all the cardiovascular pathologies which necessitated a hospitalization during the period of study. Although not considered a major sign of pericarditis, dyspnoea was the most common reason for consultation in our population [5,11,12]. This atypical clinical presentation could explain the high frequency of pericardial effusion which is usually a sign long lasting pericarditis (found in more than 90% of patients) and contribute to the late diagnosis of this pathology in our context. The delay in diagnosis leads to a high mortality rate as found in our study. On the other hand, these massive effusions could also be the cause of the dyspnoea presented by the patients on admission and would explain the muffling of heart sounds in more than half of the patients. The pericardial rub which represents the major and pathognomonic sign of pericarditis [13] was reported in less than one third of the population, contrary to other reports where it was found in more than half of patients with acute pericarditis [8,14]. This is probably due to the frequency of effusions in our population since this sign is rare in presence of a pericardial effusion. This emphasizes the needs to carry out investigations for acute pericarditis even in front of non-specific signs such as that dyspnoea to allow a rapid diagnosis.

Viral/idiopathic pericarditis were the most frequent aetiologies representing more than half of causes as described in literature followed by tuberculosis and HIV infection [5,11,15]. However, these findings are different from some African studies which reported tuberculosis as the first cause of acute pericarditis [16,17]. This discrepancy might be due recent the changes in HIV epidemiology with an increase access to highly active antiretroviral therapy and consequently decreasing HIV-related morbidity and mortality. Indeed, the prevalence of HIV in Cameroon has been decreasing in recent years. In contrast to developed countries where the management of acute pericarditis is predominantly outpatient because of the predominance of viral/idiopathic causes [2,3,11,18], this pathology requires in our environment an intra-hospital care with due to often late diagnosis and advanced stages of complications. Thus, the average length of hospital stay in our sample was greater than two weeks associated with an important mortality rate in our context. This high mortality rate concerning more than a quarter of patients hospitalized in a specialized department is mainly due to the often-late diagnosis in our context with serious complications threatening the vital prognosis such as cardiac tamponade whose management remains a challenge in our context due to limited resources. This is supported by the fact that a significant proportion of patients in our study presented in NHYA stages III and IV.

Strengths and Limitations

The intra-hospital prevalence found in our context remains high compared to that reported in developed countries where the majority of pericarditis is treated as ambulatory reducing thus the frequency of hospitalizations related to this pathology [11,15]. However, there are few data available on the topic, especially in sub Saharan Africa. For instance, to date, search for articles associated with the terms acute pericarditis in Africa provided less than thirty results on PubMed.

Conclusion

Pericarditis is an important cause of hospitalization with various aetiologies and clinical presentation in our context and associated with an important mortality.

Conflict of Interest

None.

Funding

The study received no funding.

Ethical Approval

The study received the approval of the Institutional and research Ethical Committee of the faculty of medicine and biomedical sciences.

Availability of Data and Material

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' Contributions

Study design: LMK, JB, APM, SK

Data collection: LMK, SMED, JB, APM, SK

Data analysis: LMK, SMED, JB, APM, SK

Drafting: LMK, ATT, SK

Critical discussion: All authors

All the authors approved the final version of the manuscript.

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