

## Original Research Article

## Pericardial Biopsy in the Etiological Diagnosis of Pericarditis

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### Article History

Received: 29.04.2024

Accepted: 03.06.2024

Published: 11.06.2024

### Journal homepage:

<https://www.easpublisher.com>

### Quick Response Code



**Abstract:** *Objective:* To evaluate the contribution of pericardial biopsy in the etiological research of pericarditis. *Methods:* This study was carried out in the University Hospital Centers of Point G and Luxembourg. This was a descriptive study with retrospective collection from January 2012 to May 2015. It concerned all patients operated on for pericarditis in whom the histological examination was carried out. *Results:* We operated on a total of 70 patients for pericarditis, representing a frequency of 2.3% of all surgical interventions (3044) and 49.6% of cardiac interventions (141). The average age of the patients was 31.5 years with the extremes ranging from 2 years to 84 years. The most common signs of pericarditis were chest pain (27.1%), fever (7.1%) and dyspnea (12.9%). Pericardial drainage was performed in 91.4% of patients. On histological examination, tuberculosis represented 70% and pericardial cancer metastases 4.3%. Immediate post-operative complications were marked by three (03) deaths. *Conclusion:* The histology of pericardial samples was decisive in the etiological diagnosis. The popularization of biopsy during pericardial drainage is promising in our work contexts.

**Keywords:** Pericarditis, biopsy, etiology diagnosis.

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## INTRODUCTION

Pericarditis is an inflammation of the pericardium associated or not with pericardial effusion [1]. Its prevalence is estimated in France at 5% [2]. In Africa, it varies from 6 to 10% [3- 6]. The etiology of pericarditis is not found in 30% of cases [7]. But when a cause exists, it falls into two large nosological groups: non-infectious pericarditis (CKD, neoplastic, connective tissue disease, traumatic, ICG, Dressler Syndrome, ...) and infectious pericarditis (HIV, tuberculosis, etc.). This last group is most observed in developing countries like ours. The increase in infectious pericarditis is correlated with the high frequency of HIV infection [8, 9].

Despite everything, etiological research remains a challenge, hence the increasingly frequent use of surgery, which provides both treatment and etiological diagnosis using histology.

In Mali, very few studies have been carried out on the practice of pericardial drainage and particularly the contribution of pericardial biopsy in the etiological diagnosis of pericarditis.

To help fill this gap, we initiated this study with the aim of evaluating the contribution of biopsy in the etiological research of pericarditis.

## PATIENTS AND METHODS

We carried out a descriptive study with retrospective collection from January 2012 to May 2015 in surgery department B at the Point G and Luxembourg university hospitals in Bamako.

All patients operated on for pericarditis in whom the histological examination was performed were included. A complete clinical examination, cardiac ultrasound, electrocardiogram (ECG) and preoperative laboratory assessment were performed in all patients. The data were entered and analyzed using Epi Info software (version 6).

## RESULTS

We operated on 70 patients for pericarditis, representing a frequency of 2.3% of surgical interventions (3,044) and 49.6% of cardiac interventions (141).

### Sociodemographic Data

The average age was 31.5 years with extremes of 2 years and 84 years, the age group of 10-19 years represented 31.4%. There were 40 men and 30 women, 46 patients resided in Bamako, 22 came from the 8 regions and 2 from outside Mali (one Guinean and one Ivorian).

### Clinical signs

- Nineteen patients consulted for chest pain (27.1%), 9 for dyspnea (12.9%) and 5 for fever (7.1%).
- A history of pulmonary tuberculosis was found in 9 patients.
- Pericardial friction was found in our patients in 43% of cases.

### Paraclinical signs

- We noted on cardiac ultrasound performed in all patients a pericardial effusion of low abundance in 7.1%, of medium abundance in 34.3% and of large abundance in 50%. There was no effusion in 8.6% (dry pericarditis).
- The electrocardiogram (ECG) was performed in all patients and revealed microvoltage, repolarization disorders and sinus tachycardia in 57.9%.
- We noted on the x-ray the image of a heart in a carafe in 60%.

### Surgical treatment

The majority of patients underwent emergency surgery due to hemodynamic instability. The approaches were subxiphoid and sternal.

**Table I: Type of surgery**

Interventions	Patients
Pericardial drainage	64 (91, 4%)
Pericardial decortication	6 (8,6 %)
Total	70 (100%)

**Table II: Pathological results of pericardial biopsy**

Results	Effective	Percentage
Tuberculosis	49	70
Acute nonspecific pericarditis	13	18,6
Fibrous pericarditis	5	7,1
Pericardial cancer metastases	3	4,3
Total	70	100

**Table III: Post-operative complications**

Post-operative complications	Patients (N=70)
Mortality	3 (4,3%)
Cardiac arrest	1
HIV complications	2
Morbidity	4 (5,7%)
Recidivism	3
Surgical site infection	1

## DISCUSSION

Acute and chronic pericarditis are common; they occur at all ages, although they are more common in young adults [3, 5, 10-12]. Thus, in our study 67.1% of patients were aged under 40 years. A male predominance often described in the literature was found in our study [8, 10]. The clinical manifestations observed in this work are similar to those in the literature. The symptomatic triad of chest pain, fever and dyspnea dominated the picture of pericarditis [10, 11, 13]. Pericardial friction is not constantly found. Indeed, as in numerous studies, this sign was only found in 43% of our patients [14-18]. The electrocardiogram often allows us to suggest the diagnosis. The most frequently observed signs are micro voltage and repolarization disorders. Chest radiography shows an increase in cardiac volume [2, 4, 5, 6, 14]. In our series, these different signs were found in more than half of the cases. Echocardiography has revolutionized the diagnosis of pericardial effusions [2, 10, 11]. In fact, it allows us to appreciate the abundance of the effusion, to detect signs of compression of the right chambers and to look for signs of pericardial constriction. Furthermore, it allows us to add etiological suggestions which remain the main problem. Indeed, if in developed countries we are witnessing a decline in tuberculosis which only represents 12% of pericardial damage [3, 7, 8, 12]. In Mali, as in other developing countries, tuberculous pericarditis ranks first [1, 2, 4, 5, 19].

The diagnosis of tuberculous pericarditis is made based on a set of epidemiological-clinical, biological and echocardiographic arguments. However, confirmation is provided by the histology of the pericardial biopsy performed during surgical drainage. The surgical management of pericarditis is now well codified. Mianfoutila S. *et al.*, [20] in a series of 10 drainages with biopsies performed a left anterolateral thoracotomy at the level of the 4th and 5th intercostal space. Our preference was the subxiphoid and sternal routes because of their precision and less aggressiveness. Pericarditis surgery is certainly a minor heart surgery, but often life-saving. Clinical improvement is immediate and constant.

The procedure makes it possible to completely evacuate the pericardial cavity, to assess the condition of the heart, the macroscopic appearance of the pericardium and to perform the pericardial biopsy, the only way to provide the etiological diagnosis on which the treatment depends. The treatment is etiological, the only beneficial one which is provided by pericardial biopsy and histopathological examination, with the limits of anatomy-pathology.

The anatomy-pathological results have a very high sensitivity for neoplasms, high for tuberculosis and low for common inflammations. In our series, pericardial biopsy was able to establish the etiological diagnosis in

74.3% of cases, 70% of which were of tuberculosis origin.

The favorable outcome under etiological treatment is mentioned in the literature [13, 19, 21] but some complications have been reported. We recorded 3 deaths (4.3%) of which 2 cases occurred in HIV-positive patients. The morbidity rate was 5.7%, consisting of three recurrences and one surgical site infection. This demonstrates the poor prognosis of pericarditis in certain groups of patients (HIV infection, CKD, Neoplasia) stated in the literature [9, 10, 19, 22].

## CONCLUSION

The clinical approach to a patient with pericarditis encounters numerous difficulties due to the great etiological diversity. Pericardial biopsy constitutes an important contribution to the etiological diagnosis of pericarditis, the tuberculous etiology of which remains frequent in our countries. Pericardial drainage constitutes a salutary procedure, saving compared to tamponade.

**Conflict of interest:** none

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**Cite This Article:** Kéita Mamadou Almamy, Kanté Abdoulaye, Camara Daouda, Koné Assitan, Ouologuem Aly Daouda, Coulibaly Amara, Simaga Abdoul Karim, Coulibaly Bréhima, Traoré Drissa, Ongoiba Nouhoum (2024). Pericardial Biopsy in the Etiological Diagnosis of Pericarditis. *East African Scholars J Med Sci*, 7(6), 231-233.

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