Research Article

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Hypertrophic Cardiomyopathy: Clinical and Therapeutic Aspects in the Cardiology Department at Ignace Deen University Hospital

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ABSTRACT

Introduction: *Hypertrophic cardiomyopathy (HCM) is a heterogeneous myocardial disease, most often caused by autosomal dominant mutations in the sarcomere gene, and is the most common monogenic cardiomyopathy in humans. The aim of this study was to identify cases of HCM and describe the clinical and therapeutic aspects.*

Materials and Methods: *This single-centre study was conducted in the cardiology department of the Ignace DEEN National University Hospital. It was a prospective descriptive study conducted between1September 2019 and 31 August 2020. Our selection criteria were family history and/or left ventricular hypertrophy, most often asymmetric septal hypertrophy greater than or equal to 13 mm in familial forms and greater than or equal to 15 mm in sporadic forms with no detectable clinical causes. The data were entered and analysed using Word, Excel and Epi Info 7 software.*

Results: *During our study period, 895 patients were hospitalised, of whom 25 were recorded as having HCM, representing a frequency of 2.8%.*

We noted a predominance of males. The average age of our patients was 55, ranging from 35 to 80 years old. The 51-65 age group was the most represented, accounting for 44% of patients. Dyspnoea was the most common symptom, occurring in 32% of patients, followed by angina-like chest pain in 26%. Atrial fibrillation was found in 27% of cases. Short PR was found in 0.6% of cases in a 35-year-old man, suggesting Fabry disease. Beta-blockers were the most commonly prescribed treatment (76%), followed by calcium channel blockers (24%).

Conclusion: *Hypertrophic cardiomyopathy is a relatively rare cardiac pathology in Guinean cardiology, and our patients were relatively young with signs of heart failure. The limitations of our study were the absence of echocardiography with right ventricular longitudinal strain, cardiac MRI, and molecular biology for genetic testing.*

Keywords

Hypertrophic cardiomyopathy, Cardiac MRI, Molecular biology.

Introduction

Hypertrophic cardiomyopathy (HCM) is a heterogeneous myocardial disease, most often caused by autosomal dominant mutations in the sarcomere gene, and is the most common monogenic cardiomyopathy in humans. The phenotypic expression of HCM manifests as left ventricular (LV) hypertrophy, myocardial hypercontractility, reduced compliance, myofibrillar disorder, and fibrosis [1,2].

In adults, the threshold for wall thickness is 15 mm, regardless of the measurement technique used. The prevalence is 0.2% in adults

and 0.3-0.5 per 100,000 children in the general population [3].

Since the first modern descriptions in the 1950s [4,5].

Our understanding of HCM has evolved from what was thought to be a rare and fatal disease to a relatively common disease with heterogeneous phenotypic manifestations and several therapeutic options. Today, patients with HCM generally have an excellent overall prognosis when treated with contemporary therapy [6], however, it remains a significant health burden [7].

A new therapeutic target is emerging among others. These are cardiac myosin inhibitors, with mavacamten directly targeting the hypercontractility that plays a central role in the pathophysiology of HCM [8].

The aim of this study was to identify cases of HCM and describe the clinical and therapeutic aspects.

Patients and Methods

Our work was carried out in the cardiology department of the Ignace DEEN National University Hospital. It was a prospective descriptive study conducted from[1]September 2019 to 31 August 2020. The aim of this study was to identify cases of HCM and describe the clinical and therapeutic aspects. Our selection criteria were family history and/or left ventricular hypertrophy, most often asymmetric septal hypertrophy greater than or equal to 13 mm in familial forms and greater than or equal to 15 mm in sporadic forms with no detectable clinical causes.

The presence of left intraventricular obstruction is inconsistent in HCM and allows obstructive (OHCM) and non-obstructive forms to be distinguished. Obstruction may be present at baseline, or may only appear during the Valsalva manoeuvre, or during or after exercise. Obstruction is defined as a maximum instantaneous subaortic gradient > 30 mmHg at rest, or after a provocative manoeuvre, and is haemodynamically significant above 50 mmHg. This subaortic obstruction is strongly correlated with symptoms and must be rigorously investigated, as it is the target of the main therapies for CMHO (beta-blockers, septal alcoholisation, septal reduction surgery, and soon new molecules such as selective myosin inhibitors.

Electrocardiogram

Ventricular hypertrophy according to indices, anterior repolarisation disorder with deep T waves. Sociodemographics The parameters studied were (age, gender, occupation), clinical signs of heart failure: dyspnoea, palpitations, physical asthenia, lower limb oedema, jugular vein distension, jugular venous pulsation, and syncope, which is a sign of severity. Medical history and treatment. However, none of our patients underwent magnetic resonance imaging (cardiac MRI).

The data were entered and analysed using Word, Excel and Epi Info 7 software.

Results

During the study period, we identified 25 patients with hypertrophic cardiomyopathy out of 895 hospitalisations in the department, representing a frequency of 2.8%. We noted a predominance of males. The average age of our patients was 55, ranging from 36 to 80. Cardiovascular signs were dominated by dyspnoea in 32% of cases and angina-like chest pain in 26% of cases. Furthermore, 18% were asymptomatic.

Cardiac ultrasound showed consistent hypertrophy, predominantly asymmetric septal hypertrophy. In terms of diagnostic confirmation, our centre does not have a nuclear medicine department to perform bone scintigraphy, and none of our patients underwent molecular testing.

Table 1: Distribution of patients by age group.

Age	Numbers	%
30-35	5	20
40-45	3	12
50-55	9	36
60-65	2	8
70-75	3	12
80 and over	3	12
Total	25	100

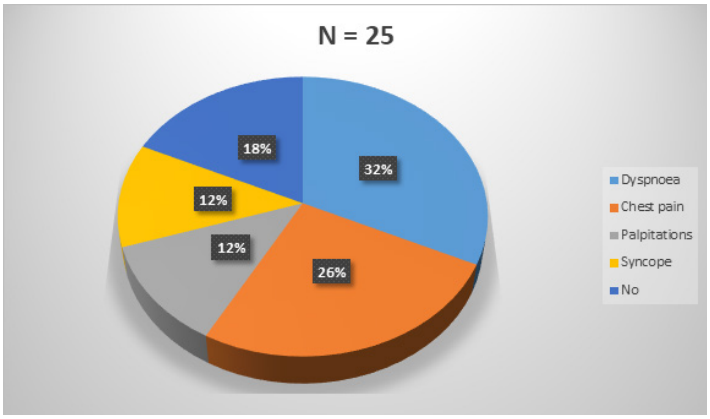

Figure 1: Distribution of patients according to symptoms.

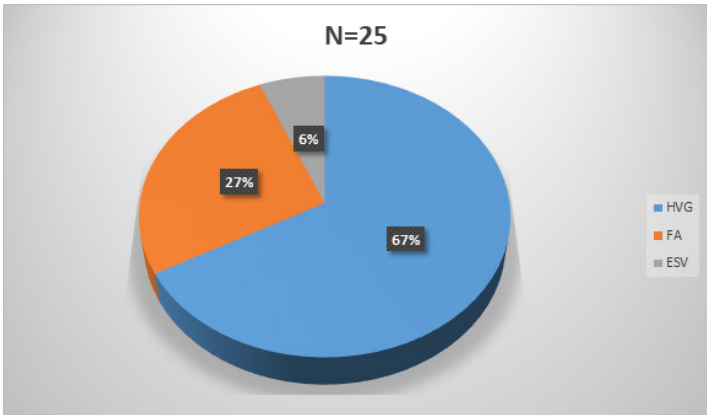

Figure 2: Distribution of patients according to electrocardiographic abnormalities:

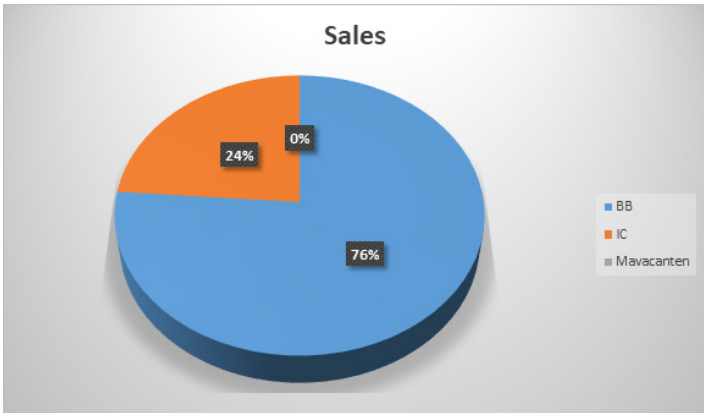

Figure 3: Distribution of patients according to medications used:

Discussion

From 1 September 2019 to 31 August 2020, the cardiology department at Ignace Ignace Deen University Hospital recorded 895 hospitalisations, including 25 cases of hypertrophic cardiomyopathy, representing a frequency of 2.8%. This result is comparable to that of Mbakwem A et al., in Lagos, Nigeria, who reported 2% [9]. This could be explained by the difference in sample size.

The patients were aged between 35 and 80, with an average age of 55. The 51-65 age group was the most represented, accounting for 44% of cases. This result is similar to that of Koné Y, with an average age of 45 ± 14.4 years [10].

There was a predominance of males, with a male-to-female ratio of 1.5. Our study is similar to that of Traoré D, who found a male-to-female ratio of 1.4 [11]. However, our result is higher than that of Koné Y, whose study reported a male predominance with a sex ratio of 1.2 [10]. Male predominance is common in the literature. It can be explained in part by the high risk of cardiovascular disease in males.

Among the patients' medical histories, we recorded 10% with hypertension, 2.2% who were athletes and 1% with aortic stenosis. These medical histories are described as situations of adaptive hypertrophy.

From a clinical and paraclinical perspective, dyspnoea was the most common symptom, occurring in 32% of cases, followed by angina-like chest pain in 26% of cases. These results are consistent with data in the literature [12] and frequently encountered in HCM.211 Dyspnoea is linked to LV diastolic dysfunction, while chest pain is secondary to ventricular hypertrophy, creating an imbalance between myocardial oxygen demand and supply.

Atrial fibrillation was found in 27% of cases. The onset of AF is an important turning point in the morbidity and mortality of HCM, representing an independent risk factor for mortality. Furthermore, it is the most common arrhythmia in this nosological entity, ranging from 18% [13,14].

Catheter ablation of AF is now considered an alternative treatment option. Short PR was found in 0.6% of a 35-year-old man, suggesting Fabry disease. This disease is a lysosomal storage disorder secondary to alpha-galactosidase A deficiency. It is transmitted in a recessive manner and is linked to the X chromosome [15].

In terms of treatment, Beta-blockers were the most commonly prescribed treatment (60%), followed by calcium channel blockers (24%).

MacRae CA reports in his study that beta-blockers and calcium channel blockers produce good results [16].

Treatment options for HCM can be pharmacological or invasive. Traditional pharmacotherapy for HCM includes beta-blockers, vasodilators and calcium channel blockers.

Interventions include alcohol septal ablation and surgical septal myectomy. This review will focus on mavacamten, a novel cardiac myosin inhibitor (CMI) that was recently approved by the Food and Drug Administration (FDA) for patients with HCM [17].

In HCM, there is an upregulation of cardiac contractility with only 15–20% of myosin heads in an inactive state compared to 40–50% in the normal inactive state [18].

Conclusion

Hypertrophic cardiomyopathy is a relatively rare cardiac pathology in Guinean cardiology, and our patients were relatively young with signs of heart failure.

Particular emphasis must be placed on the accessibility of cardiac imaging and genetic testing for aetiological diagnosis in a population with limited income.

The limitations of our study were the absence of echocardiography with longitudinal right ventricular strain, cardiac MRI and molecular biology for genetic testing and family screening with a view to organising early management to avoid complications.

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