Dilated Cardiomyopathy in the Cardiology Department of the CHU of Casablanca: Epidemiological Aspects

Abstract:

Dilated Cardiomyopathy (DCM) is defined by a left ventricle (LV) with reduced systolic function (<45%) and dilation (LV volume > 90 ml/m²), excluding coronary artery disease or sufficient load conditions to explain it. The etiologies are multiple and increasingly well-known. We conducted a single-centre, retrospective observational study within the cardiology department of the CHU IBN ROCHD in Casablanca, Morocco, over one year. The main objective was to describe the characteristics and particularities of patients followed for DCM. During the study, 44 patients were included, with a male predominance of 63.6% versus 36.4%. The average age was 60 ± 16.8 years. The initial presentation of cardiomyopathy showed that 73% of patients were admitted with heart failure (HF). The mean left ventricular ejection fraction (LVEF) was 30.2 ± 7.9%. Among the attributed etiologies, idiopathic DCM was the main cause reported in 59% of cases, followed by systemic lupus erythematosus (14%) and myocarditis (14%). In our sample, treatment was based on HF management, including beta-blockers, renin-angiotensin system blockers, SGLT2 inhibitors, and aldosterone antagonists. Implantation of a defibrillator for primary prevention concerned only one patient (3%) of the 33 patients for whom the theoretical indication was retained..

(please include following

1. excluded IHD patients,
2. diagnosis is based only on echocardiography

Keywords: Heart Failure, Dilated Cardiomyopathy, Left Ventricular Ejection Fraction, Transthoracic Echocardiography.

Introduction:

Dilated Cardiomyopathy (DCM) is defined by a left ventricle (LV) with reduced systolic function (<45%) and dilation (LV volume > 90 ml/m²), excluding coronary artery disease or sufficient load conditions to explain it [1]. An incidence of 4.5/100,000 inhabitants per year has been reported. It represents 15 to 20% of the etiologies of systolic heart failure (HF) recruited in major clinical trials and is the leading indication for heart transplantation [2]. The etiologies are multiple and increasingly well-known. The discovery of these etiologies has enabled an exhaustive assessment of less invasive diagnostic methods and the implementation of specific treatments that have significantly modified the prognosis of DCM. Currently, available epidemiological data on DCM in Morocco are limited [3]. The main objective of our study is to describe the characteristics and particularities of patients followed for DCM at the University Hospital Center (CHU) of Casablanca.

2. Patients and Methods

The study model chosen is a single-center, retrospective observational study conducted within the cardiology department of the CHU IBN ROCHD in Casablanca, Morocco. This study involved all patients diagnosed with DCM between January 1, 2023, and December 31, 2023.

2.1. Procedure and Data Collection Tools

Patient recruitment was based on the exploitation of individual hospitalization records from the UTIC database, using the main discharge diagnosis coding according to the defined inclusion criteria. The collected and analyzed data concerned only the first relevant admission during the inclusion period. A single person was responsible for data collection from the computerized UTIC file. The data were directly entered, after anonymization, into an electronic form (appendix) created with the EPI-INFO software and then compiled into a database.

2.2 Sampling

All patients hospitalized in the cardiology department with a primary discharge diagnosis of dilated cardiomyopathy are eligible for the study. This includes patients with compensated dilated cardiomyopathy managed in the heart failure treatment unit.

2.3 Statistical Analysis

Quantitative variables with a normal distribution were described using means and standard deviations; other quantitative variables were described using medians, maximums, and minimums. Qualitative variables were presented as counts and frequencies. Standard tests were used for statistical analyses. The risk of error was set at 5% (p=0.05).

3. Results:

The results presented below correspond to the review of 213 records from the list provided by UTIC. Among these, 44 patients were included.

3.1 Demographics

Of the 44 patients included, 28 were men (63.6%) and 16 were women (36.4%). The average age was 60 ± 16.8 years. The age by sex is represented in Table I.

Table I: Age by Sex

	Total	**Men**	**Women**	
	Demography (n=44)			
Sex	44 (100%)	28 (63,6%)	16(36,4%)	p= 0,7303
Middle age (years)	60	59,3	61,1	

Standard deviation	16	15,1	18

3.2 Clinical and Biological Cardio-Metabolic Data

The average blood pressure was 135/79.3 ~~mmHg~~ ± 22.6 mmHg. The heart rate was ~~84.6~~ 84 bpm. Other available cardio-metabolic data are presented in Table II.

Table II: Clinical and Biological Cardio-Metabolic Data

Data	**Total (n=44)**	**NA**
Systolic blood pressure average (mmHg)	135+/-22,6	
Diastolic blood pressure average (mmHg)	79,3 +/-12,7	
Average heart rate (beats/min)	84,6+/-17,4	
BNP (ng/l)	473,9	
Biological inflammatory syndrome	12 (40%)	14
Immunological assessment	AAN : 2(4,5%)	
ANA, DNA natifs	DNA :2 (4,5%)	
Sérologies		
HIV, Syphilis, Toxoplasmosis, EBV, CMV	SARS COV-2 : 19 :2 (4,5%) HIV :1 (2,3%)	

NA: Not Available

3.3 Initial Clinical Presentation

The initial presentation of cardiomyopathy shows that 73% of patients were admitted with heart failure.

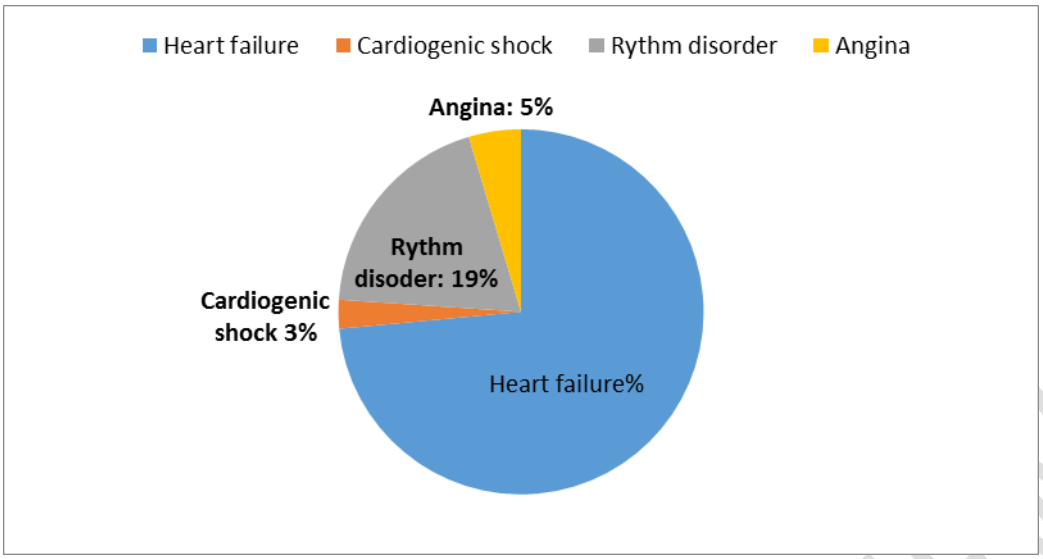

Figure 1: Initial Clinical Presentation

3.4 Additional Examination Data

The rhythm was sinus in 37 patients (84.1%). Six patients (15%) had atrial fibrillation. A complete left bundle branch block was present in 8 patients (19%). The mean left ventricular ejection fraction (LVEF) was 30.2 ± 7.9%. The mean left ventricular end-diastolic diameter was 65.4 ± 5.9 mm. Mitral regurgitation was present in 35 patients (87.5%). It was severe in 4 patients (11.4%) and moderate in 17 patients (48.5%). Pulmonary hypertension was found in 14 patients (36.8%). No patient benefited from a cardiac MRI

It is important to mention LV volume, LA dilatation, RV findings size, function and TR gradient, presence or absence of PHT)

3.5 Etiologies

Figure 2 presents the etiologies of DCM. Among the attributed etiologies, idiopathic DCM was the main cause reported in 59% of cases, followed by systemic lupus erythematosus (14%) and myocarditis (14%).

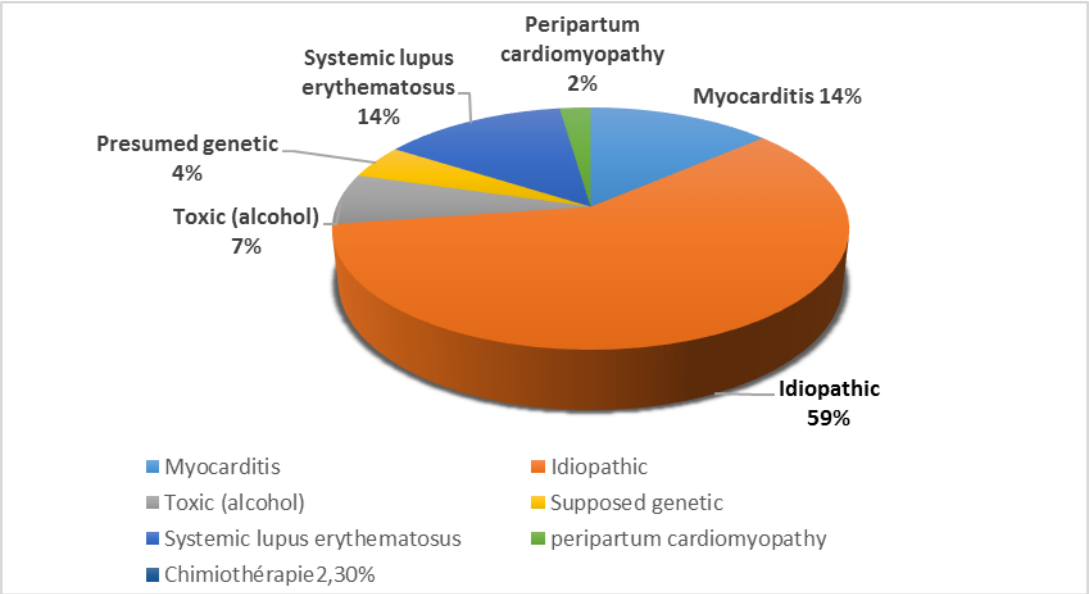

Figure 2: Distribution of Different Etiologies

In our sample, treatment was primarily based on heart failure management, including beta-blockers, renin-angiotensin system blockers, SGLT2 inhibitors, and aldosterone antagonists. Need to mention of ARNI Defibrillator implantation for primary prevention concerned only one patient (3%) of the 33 patients for whom the theoretical indication was retained. No patient benefited from cardiac resynchronization therapy, despite it being indicated for 8 patients. Besides HF treatment, the treatment of the etiology mainly relied on corticosteroids (boluses of methylprednisolone followed by oral administration with gradual tapering and calcium and potassium supplementation). Patients with SLE were given immunosuppressants (Imurel). Alcohol cessation management was implemented for patients with alcoholic DCM.

4. Discussion

The objective of this study is to describe ~~the main characteristics~~ etiology of patients presenting with DCM in the cardiology department of the CHU of Casablanca. The average age of our patients was 60 years, with a predominance in the 60-69 age group, which is consistent with the results of various series conducted by Hoque et al. and Lombo et al. in their studies [4,5], reflecting the increased life expectancy in Maghreb countries.

Heart failure is the primary circumstance for the discovery of DCM, found in nearly 8 out of 10 cases, far ahead of other less frequent circumstances such as pseudo-anginal chest pain, palpitations related to arrhythmia, or more rarely, fortuitous discovery. In our study sample, atrial fibrillation was present in 15% of patients. However, according to S. Kumar, 30-40% of patients develop AF during the progression of their disease, increasing morbidity and mortality [6]. It should also be noted that data collection was based solely on admission ECGs, and no patient benefited from an ECG Holter.

Transthoracic echocardiography remains the gold standard for diagnosing DCM due to its low cost and accessibility. By monitoring remodeling, it can guide the etiological framework and impact prognosis. In our study, the mean LVEDD was 65.4 mm, (include range or SD)similar

to the studies by Faraj et al. (64.74 mm) and slightly lower compared to the study by Bouakez et al. [7,8]. The second essential parameter for diagnosing DCM is LV dysfunction, observed in all our patients with a mean value of 30.2%,(include range or SD) similar to the study by Hoque et al. (30.44%) and Simon et al. (32.46%) [4,9].

Cardiac MRI, due to its non-invasive nature and its ability to distinguish non-ischemic dilated cardiomyopathies by locating late enhancement, is increasingly becoming the first-choice examination. Unfortunately, in our study, no MRI was performed due to unavailability in our center during the study period.

The diagnosis of DCM is challenging in practice due to numerous, heterogeneous, and sometimes intertwined etiologies. In our study, idiopathic etiology was predominant with a frequency of 59%. Our results are consistent with the literature data, as it represents approximately 50% of DCM etiologies [10].

5. Conclusion

This study reveals the particularities regarding both the presentation of DCM and its etiologies, as well as the different clinical presentations. DCM is one of the main causes of heart failure (HF). While management is well codified in Western countries, the present study has shown the difficulties of managing DCM in our context. These challenges are evidenced by low accessibility to complementary examinations and current therapies, due to the low socioeconomic status and precarious living conditions.

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