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Dilated Cardiomyopathy in the Cardiology Department of the CHU of Casablanca: A One-Year Observational Study

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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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. The diagnosis is based only on echocardiography, after exclusion of an ischemic cause, severe valvular disease, and congenital heart disease. 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

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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.

Keywords: Heart failure; dilated cardiomyopathy; left ventricular ejection fraction; transthoracic echocardiography.

1. 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 1.

Table 1. 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	

Table 2. 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 ANA, DNA natifs	AAN : 2(4,5%) DNA :2 (4,5%)	
Sérologies HIV, Syphilis, Toxoplasmosis, EBV, CMV	SARS COV-2 : 19 :2 (4,5%) HIV :1 (2,3%)	

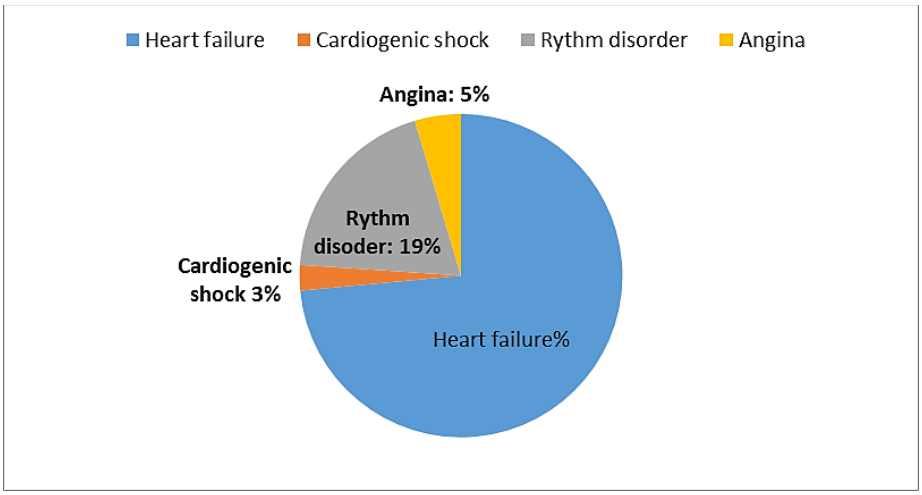

Fig. 1. Initial clinical presentation

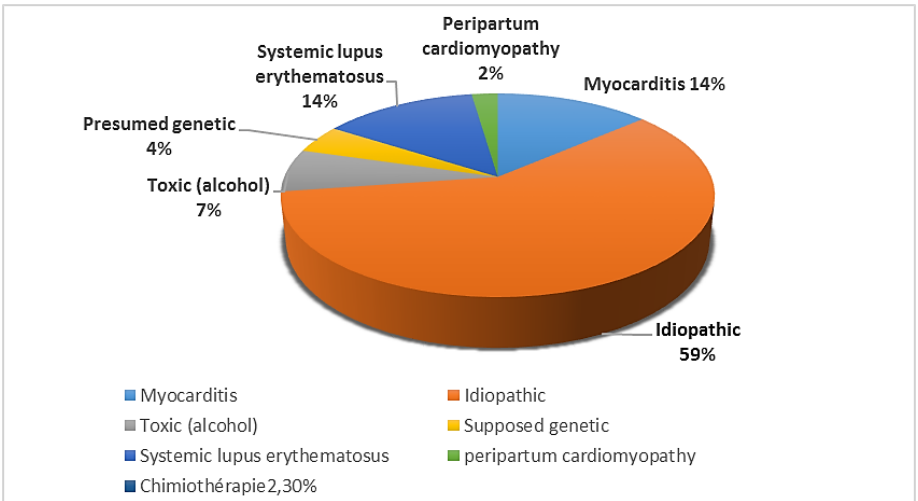

Fig. 2. Distribution of different etiologies

3.2 Clinical and Biological Cardio-Metabolic Data

The average blood pressure was 135/79.3 ± 22.6 mmHg. The heart rate was 84 bpm. Other available cardio-metabolic data are presented in Table 2.

3.3 Initial Clinical Presentation

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

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%). Dilation of the left atrium was found in all patients. Dilation of the right cavities was present in 23 patients (52,3%). The average value of the TAPSE was 19,7 +/- 4,4 mm. Pulmonary hypertension was found in 14 patients (36.8%). No patient benefited from a cardiac MRI

3.5 Etiologies

Fig. 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%).

In our sample, treatment was primarily based on heart failure management, including beta-blockers, renin-angiotensin system blockers/ angiontensin receptor neprilysin inhibitor, SGLT2 inhibitors, and aldosterone antagonists.

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 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 +/- 5,9 mm, 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 +/- 7,9% 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.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that no generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of manuscripts.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Sinagra G, Elliot PM, Merlo M. Dilated cardiomyopathy: So many cardiomyopathies! European Heart Journal. 2020, oct 14;41(39):3784-6.
2. Pasqualucci D, Lacovoni A, Palmmieri V, De Maria R, Lacoviello M et al. Epidemiology of cardiomyopathie: Essential context knowledge for a tailored clinical work-up; 2002.
3. Ghazaly A, Oummou S, Elkarimi S et al. The epidemiological profile of dilated cardiomyopathy in children: About 31 cases. Cardiology Department Pediatric Department, Mohammed VI University Hospital, Marrakech.
4. Hoque SJ, Rahman A, Alam Mdz, Irfan SMR. Clinical profile of patients with idiopathic dilated cardiomyopathy in a tertiary care hospital of bangladesh; 2019.
5. Lombo DL. Dilated cardmiomyopathy in CHN-YO: Paraclinical and evolving clinical epidemiological aspects: About 143 cases collected from 1966 to 1999 :160. Thesis Ouagadougou ; 2001.
6. Kumar S, Stevenson WG, John RM. Arrythmias in dialted cardiomyopathy. Cardiac electrophysiology clinics. 2015, Juin;7(2):221-33.
7. Faraj PA, Berbich PA, Lazrak PB. Dilated cardiomyopathy: Diagnostic and etiological aspects in 27 cases. Thesis Med Rabat ; 2021.
8. Bouakez A, Bouakez AH. Epidemiological and progressive aspects of dilated cardiomyopathy. 2000;4.
9. Simon M. Idiopathic dilated cardiomyopathy at the hospital De La Paix in Ziguinchor: About 79 cases. Open access. 2018;5.
10. Braunwald E. Cardiomyopathies : An overview. Circ Res. 2017, sept 15;121(7): 711-21.

APPENDIX

***I. Personal Information**:*

- Age (years):
- Gender: Man □ Woman □
- Date of admission:
- Reason for hospitalisation :

II. Cardiovascular history/risk factors

- HTA: yes□ no □ Diabetes: yes □ no □
- Dysthyroidism: yes□ no □ System disease/Autoimmune: yes □ no □:
- Active cancer/Radiotherapy/Chemotherapy: yes □ no □
- Lifestyle: Alcoholism: yes □ no □; Smoking: yes □ no □

III. Exam signs:

- Functional signs:

• Dyspnea: yes □ no □ Cough: yes □ no□
• Chest pain: yes □ no □ Syncope / lipothymia: yes □ no□
• Palpitations: yes □ no □

*- **Physical signs:***

• Fever: yes □ no □
• Heart rate: ….. bpm

• Blood pressure: SBP:…….. mm Hg; DBP:……mm Hg
• Signs of right heart failure: yes □ no □
• Signs of left heart failure: yes □ no □
• Signs of congestive heart failure: yes □ no □
• Cardiogenic: Schok yes □ no □

IV. Paraclinical examinations:

1. Biology:

- CBC: Hb(g/dl):……; GB(mm³):……; PLA(mm³):……..
- VS:.....CRP;……...; Biological inflammatory syndrome: yes □ no □
- Creatinemia (mg /l):……..;GFR (ml/min):….....Glycemia (g/l):….…… ……
- Blood ionogram: Natremia (meq/l):…….. ; Blood potassium (meq/l):……
- BNP (ng/l):……
- Immunological assessment: Positive yes □ no □ Negative yes □ no □

2. Paraclinic:

- ECG
• Sinus rhythm: yes □ no □
• ACFA: yes □ no □
• BAV: yes □ no □, BBG: yes □ no □, BBD: yes □ no □
• Extrasystoles: yes □ no □
• TV: yes □ no □; If yes: Supported yes □ no □

- ***Echocardiography:***

• *FE: ……...%*
• *DTD VD (mm):……*
• *Dilation of the right cavities: yes □ no □*
• *Cavitary thrombosis: yes □ no □; Spontaneous contrast: yes □ no □*
• *Mitral regurgitation: yes □ no □, if yes: Severity:……...*
• *HTP: yes □ no □*
• *Measurement of PAPS (mm Hg):……*

V. Etiologies:

• *Idiopathic: yes □ no □*
• *Genetics: yes □ no □; if yes, genetic test: yes □ no □*
• *CMPP: yes □ no □*
• *Myocarditis: yes □ no □*
• *Dysthyroidism: yes □ no □*
• *Diabetes: yes □ no □*
• *Toxic: alcoholic: yes □ no □, Medication: yes □ no □, Drugs yes □ no □*
• *Autoimmune disease: yes □ no □, if yes specify:……*

VI. Treatment:

1. Pharmacological means:

- Conversion enzyme inhibitors: yes □ no □
- Angiotensin II receptor antagonist: yes □ no □
- Anti aldosterone: yes □ no □
- Loop diuretics: yes □ no □
- Beta blockers: yes □ no □
- Vasopressin amines: yes □ no □
- ISGLT2: yes □ no □
- angiontensin receptor neprilysin inhibitor: yes □ no □
- Anticoagulants: yes □ no □; If yes, specify:……..
- Ivrabadine: yes □ no □

2. Electrical means:

DAI: yes □ no □ Resynchronization: yes □ no □
AF ablation: yes □ no □ CEE: yes □ no □

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