

Clinical burden of obstructive and non-obstructive hypertrophic cardiomyopathy: insights from a nationwide study in France

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Introduction

- Hypertrophic cardiomyopathy (HCM) is the most commonly heritable cardiovascular disease and is defined by left ventricular hypertrophy not solely explained by abnormal loading conditions.
- This chronic, progressive myocardial disease occurs as obstructive (oHCM) and non-obstructive (nHCM) subtypes.¹
- Little is known about nHCM patients and their burden, as nHCM is not as widely studied as oHCM or HCM in general.

Methods

Data source

- This study analysed data from the French National Health Data System (Système National des Données de Santé [SNDS]). It contains individual-level data for health-expenditure billing and reimbursement purposes for outpatient and healthcare facilities. Therefore, it encompasses anonymous, individual-level data for all healthcare claims for more than 99% of the population residing in France (i.e. close to 65 million people).²

Study population

- All adult patients (≥ 18 years) with at least one hospital stay related to an HCM International Classification of Diseases 10th Revision (ICD-10) code (I42.1, I42.2, or I42.9) between January 1, 2012, and December 31, 2018, and at least a 12-month follow-up data available were included.
- Patients were divided into two subtypes:
 - oHCM patients were identified as patients with an oHCM code (I42.1) or patients with a HCM code (I42.2 or I42.9) associated with a septal reduction therapy (SRT).
 - nHCM patients were identified as all other patients.
- To target the sarcomere aetiology, patients with amyloidosis, aortic stenosis, hypertensive heart disease, or storage diseases were excluded.
- The index date was either January 1st, 2012, for patients with HCM information before the inclusion, or the date of the first HCM code during the study period.

Statistical analyses

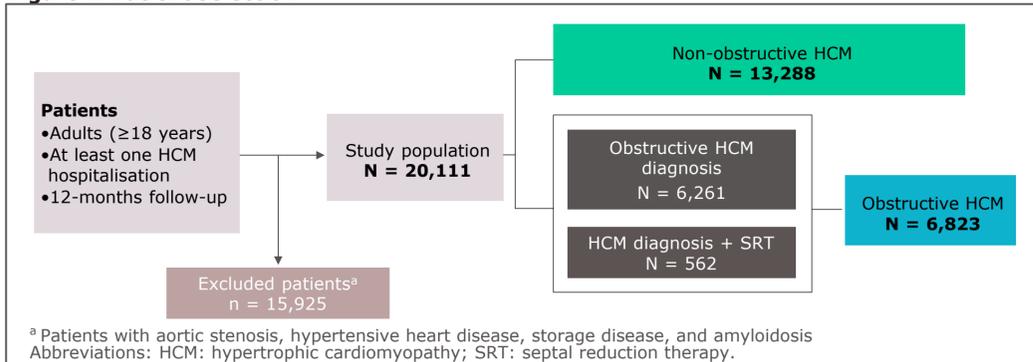
- The study described treatments and cardiovascular outcomes, using age subgroups ≤65 years and >65 years in women and men to mitigate sex-ratio and age-related confusion bias.
- Hospitalisations were identified during follow-up and categorised according to diagnosis.

Results – Study population

Patient population

- Between 2012 and 2018, 20,111 adult patients met the eligibility criteria (Figure 1).
- Among those, 13,288 (66%) were classified in the nHCM group and 6,823 (34%) in the oHCM group.
- At the index date, nHCM patients were older than oHCM (mean age of 71.6 years vs. 65.5 years) and more frequently male (59% vs. 55%). Patients with nHCM had more comorbidities (Charlson score ≥5: 52% vs 35%), mainly hypertension (84% in nHCM vs 83% in oHCM), atrial fibrillation (27% vs 23%), diabetes (26% vs 18%), and heart failure (24% vs 21%).

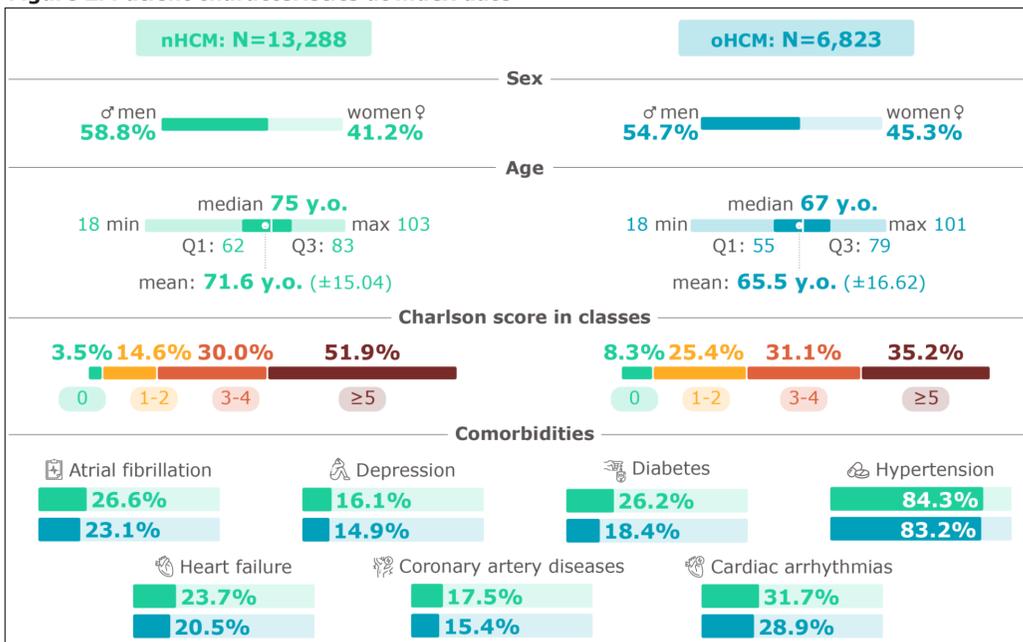
Figure 1. Patient selection



Results – Patients characteristics

- Patients with nHCM were older and more frequently male than oHCM.
- nHCM patients were more co-morbid than oHCM patients in all age and sex subgroups.

Figure 2. Patient characteristics at index date

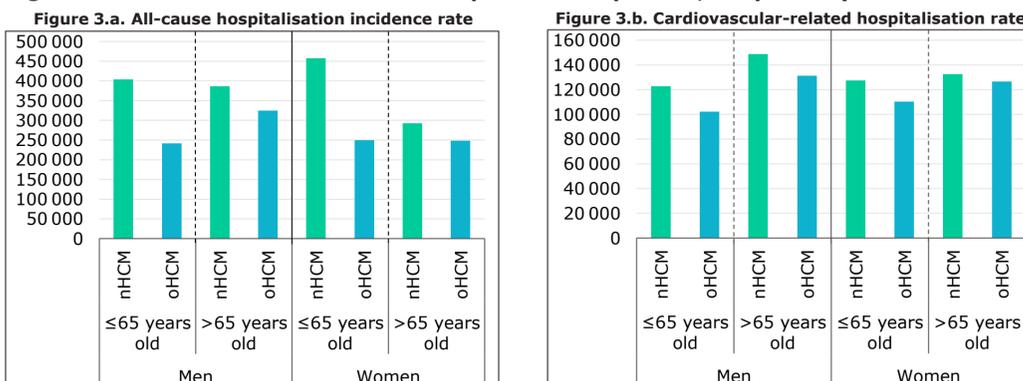


Results – Health outcomes

Hospitalisations

- During the follow-up period (mean duration of 4.9 years), and regardless of gender/age group, nHCM patients were more frequently hospitalised for any cause than oHCM patients (Figure 3).
- Cardiovascular-related hospitalisations were also more frequent in nHCM patients in all gender/age groups. Ischemic heart disease caused more frequent hospitalisations in nHCM patients than oHCM with 28,040 hospitalisations per 100,000 person-years (PY) in nHCM patients vs 17,988 in oHCM. Atrial fibrillation caused as frequent hospitalisations in both groups with 30,275 hospitalisations per 100,000 PY in nHCM patients and 30,550 in oHCM. These results were stable among subgroups.

Figure 3. Annualised incidence rate of hospitalisations per 100,000 person-years



Cardiovascular outcomes

- In men and women and in both age groups, cardiovascular events were numerically more frequent in nHCM patients than oHCM patients, except for heart transplants (Table 1).
- The all-cause mortality was also numerically higher in nHCM patients than oHCM patients.

Table 1. Annualised incidence rate of cardiovascular outcomes and annualised all-cause mortality per 100,000 person-years

Event	Men				Women			
	≤65 years old nHCM	≤65 years old oHCM	>65 years old nHCM	>65 years old oHCM	≤65 years old nHCM	≤65 years old oHCM	>65 years old nHCM	>65 years old oHCM
Pacemaker implantation	19,167	10,915	4,1454	32,934	20,396	10,805	35,116	23,676
Stroke/TIA	4,217	3,691	5,963	5,959	3,243	3,889	5,610	5,746
Death (all causes)	2,910	2,146	10,907	8,541	2,858	1,936	10,864	8,966
Myocardial infarction	1,724	1,178	2,228	1,630	1,172	1,000	2,043	1,936
DVT/PE	1,004	727	1,645	1,447	1,381	1,063	2,572	2,273
Heart transplant	234	618	0	13	209	667	0	0

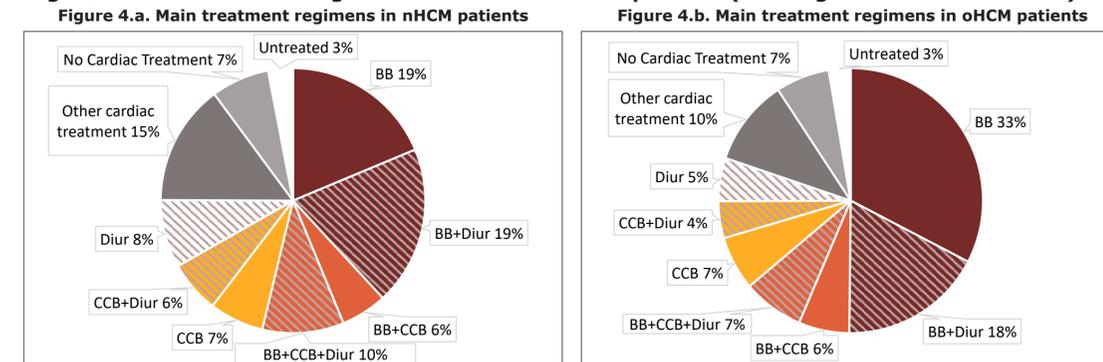
Abbreviations: nHCM: non-obstructive hypertrophic cardiomyopathy; oHCM: obstructive hypertrophic cardiomyopathy; TIA: transient ischemic attack; DVT: deep vein thrombosis; PE: pulmonary embolism.

Results – Treatments

Treatments

- 54% of nHCM patients' first treatment regimen after index date was betablocker-based, 35% diuretic-based, and 25% calcium channel inhibitor-based. In oHCM patients, there were more betablocker-based (64%) and less diuretic-based (35%) treatment regimens.
- The results were similar for subsequent treatment regimens and in subgroups, with the exception of the the non-obstructive >65 subgroup where there were more diuretic-based treatment regimens.

Figure 4. Main treatment regimens in nHCM and oHCM patients (first regimen after index date)



Abbreviations: nHCM: non-obstructive hypertrophic cardiomyopathy; oHCM: obstructive hypertrophic cardiomyopathy; BB: beta-blockers; CCB: calcium channel inhibitor; Diur: diuretics

Conclusions

- This study shows that patients with non-obstructive HCM have numerically higher all-cause hospitalisation rates compared to those with obstructive HCM.
- Most cardiovascular events were consistently numerically more frequent in the non-obstructive HCM group than in the obstructive HCM group, and the all-cause mortality was also higher.
- The results were consistent across the four age and sex subgroups.
- In the non-obstructive HCM population, this study highlights a high clinical burden and unmet medical needs.

References

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