Real-world clinical burden of obstructive hypertrophic cardiomyopathy: A nationwide study in France

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BACKGROUND

Obstructive hypertrophic cardiomyopathy (oHCM) is associated with increased mortality and frequent cardiovascular events [1-2]

Real-world evidence remains limited and heterogeneous across studies [3-4]

OBJECTIVE

The objective of the study was to describe the recent clinical burden of oHCM in France on a long-term follow-up using a representative claims-based sample.

METHODS

A retrospective cohort study was conducted based on the 2% representative sample of French National claims database (*Échantillon du Système National des Données de Santé*, ESND).

Adults with an incident hospitalization for oHCM between 2014–2023 were included (index date corresponding to the first hospital stay for oHCM identified with ICD-10 code I42.1 as principal diagnosis or related diagnosis), with a follow-up until end of 2024.

Exclusion of confounding conditions was applied (aortic stenosis, hypertensive heart disease, storage disease, abnormalities of carbohydrate metabolism, amyloidosis).

Figure 1: Study timeline

NYHA class were derived using a clustering algorithm based on treatment patterns and symptom (hierarchical clustering using ward method), estimating which NYHA class a patient was most likely to be part of.

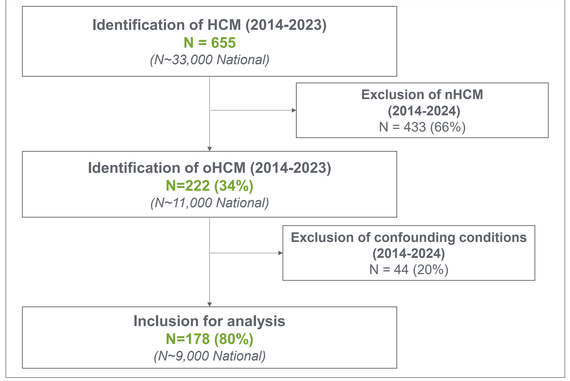
Outcomes were all-cause and cardiovascular (CV) mortality, and hospitalisations for stroke, myocardial infarction, new onset atrial fibrillation, heart failure (necessitating admission or IV diuretics), sustained ventricular tachycardia, all identified through inpatient admissions and ICD-10 codes as primary diagnosis.

Event rates were reported per 100,000 patient-years (PY) for cardiovascular outcomes, with Poisson 95% confidence interval. Kaplan–Meier analysis was used to assess risk of events.

RESULTS

A total of 178 patients with oHCM were identified, corresponding to approximately 8,900 patients at the national level after extrapolation.

Figure 2: Patient inclusion flowchart



The mean follow-up duration was 5.7 years and was shorter in more severe patients (4.9 vs 6.6 years for NYHA III/IV vs I/II). Patients with advanced disease severity (NYHA III/IV) experienced a consistently higher burden of clinical events compared with those in NYHA I/II. Higher rates of all-cause hospitalization, CV hospitalization, and mortality were observed among patients with NYHA III/IV (Table 1).

Regarding mortality, 26% of patients died during follow-up. The mortality rate was estimated to be 2.5 per 100 PY for NYHA I/II classes and 6.7 per 100 PY for NYHA III/IV classes. The resulting 5-year mortality probability was 9.7% and 23.7%, respectively.

Table 1: Description of patients at index date

	Total (n=178)	NYHA I/II (n=78)	NYHA III/IV (n=100)	p-value
Gender, Male	98 (56.0%)	38 (50.6%)	60 (60.0%)	p = 0.44
Age (years)	60.7 (15.5)	54.1 (16.8)	65.9 (12.1)	p < .0001
Follow-up dur. (years)	5.7 (5.2)	6.6 (3.7)	4.9 (2.7)	p < .0001
Risk factors (n)*				
Hypertension	131 (72.0%)	48 (59.3%)	83 (82.2%)	p = 0.001
Coronary artery disease	55 (30.2%)	23 (28.4%)	32 (31.7%)	p = 0.63
Atrial fibrillation	35 (19.2%)	3 (3.7%)	32 (31.7%)	p = 0.001
Heart failure	57 (31.3%)	16 (19.8%)	41 (40.6%)	p = 0.003
Conduction disorder	14 (7.7%)	3 (3.7%)	11 (10.9%)	p = 0.30
Diabetes	33 (18.1%)	12 (14.8%)	21 (20.8%)	p = 0.30
Hypercholesterolemia	10 (5.5%)	3 (3.7%)	7 (6.9%)	p = 0.21
History of stroke	13 (7.1%)	1 (1.2%)	12 (11.9%)	p = 0.01

* Assessed during the year before index date using diagnoses code from admission (primary, related and associated diagnoses) and/or treatments specific to the disease.

Table 2: Annual incidence of CV outcomes (per 100,000 PY) in patients with oHCM by NYHA class

CV outcomes, n (95%CI)	Total (n=178)	NYHA I/II (n=78)	NYHA III/IV (n=100)
All-cause hospitalizations	**270,051**	**100,265 (91,755 – 108,746)**	**169,786 (158,396 – 181,352)**
CV hospitalizations	**69,629**	**24,970 (20,775 – 29,129)**	**44,659 (38,914 – 50,574)**
Stroke	1,001	384 (21 – 482)	617 (86 – 962)
Myocardial infarction	4,199	1,729 (790 – 2770)	2,470 (1,276 – 3,785)
Atrial fibrillation	35,452	7,875 (5,570 – 10,130)	27,577 (23,012 – 32,103)
Heart failure	18,714	5,954 (3,967 – 7,887)	12,760 (9,783 – 15,894)
Ventricular Tachycardia	43,438	11,333 (8,627–14,185)	32,105 (27,265 – 37,113)
All-cause mortality	**9,288**	**2,497 (1,260 – 3,657)**	**6,791 (4,590 – 8,935)**
CV death	1,825	384 (21 – 482)	1,441 (579 – 2,401)

Figure 3: Incidence of all-cause mortality

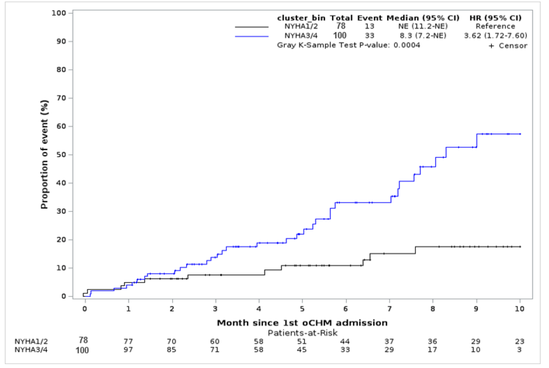
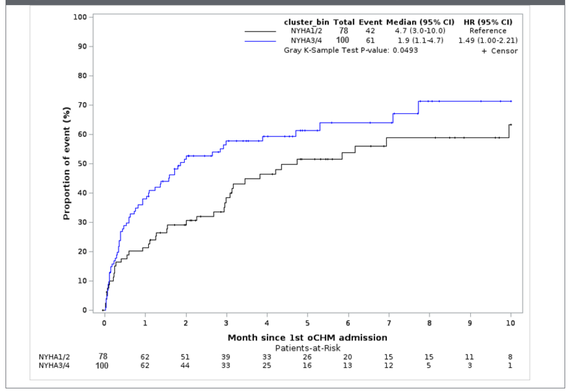


Figure 4: Incidence of First recurrent CV hospitalization



CONCLUSIONS

- This real-world nation-wide observational study based on a cohort of hospitalized patients for oHCM demonstrates oHCM was associated with substantial mortality and high rates of CV hospitalizations, with marked gradients by NYHA severity.
- Mortality estimates aligned with existing studies, while most non-fatal event incidences were lower, likely reflecting younger cohort and longer follow-up. These results refine contemporary real-world evidence for oHCM outcomes.

Limitations

- The exploratory approach for NYHA stage identification as NYHA stages were derived from treatment patterns and symptoms observed in claims data rather than established clinical classification with potential misclassifications,
- The selection of more severe oHCM patients compared to real-life as patients were included if hospitalized at least once for oHCM (leading to low representation of stage I NYHA patients)

References

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