Acute Heart Failure Syndromes in the Elderly
The European Perspective

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KEYWORDS

• Acute heart failure • Elderly • European registries • Comorbidities • Prognosis

KEY POINTS

- Older patients have more comorbidities, arterial hypertension, atrial fibrillation, and heart failure with preserved ejection fraction (HFpEF).
- Older patients have increased in-hospital, short- and long-term mortality.
- Severe initial presentation and age itself worsens short-term outcomes; older age, renal dysfunction, and frailty are negative predictors in the long-term.
- The clinical profiles and management of elderly are similar in Europe and the United States, except for the length of hospital stay (LOS), which is shorter in the United States; there is common underuse of echocardiography in the elderly.
- There is underprescription of neurohormonal antagonists in elderly in Europe and the United States, but with improving trends.

INTRODUCTION

Although survival rates of patients with heart failure (HF) have improved in the recent decades, the prevalence of HF syndrome is paradoxically increasing.[1] This increase has been attributed to a combination of an aging population and the dissemination of effective therapies for HF. The elderly population is preferentially affected by HF with preserved ejection fraction (HFpEF), an entity with poor outcomes compared with HF with reduced ejection fraction (HFrEF) but with different phenotypic myocardial alterations and possibly different underlying pathophysiologic mechanisms.[2,3] In the real setting of acute HF (AHF), elderly patients—usually defined by a cutoff age of 70 to 80 years—constitute a considerable fraction of affected individuals: in large AHF registries, the mean age of patients with acute pulmonary edema or decompensated chronic HF was approximately 75 years, whereas the rates of octogenarians (≥80 years) ranges between 21% and 38% of the total population (**Table 1**).[4–16] Prospective registries and randomized clinical trials have reported notable differences between elderly and younger patients with AHF, most importantly regarding demographic data, clinical profiles, comorbid diseases, outcomes, and associated prognostic factors.[5–16] Age-related disparities also occur in the management of elderly AHF, as suggested by underuse of diagnostic modalities, guideline-recommended HF drugs, and other therapeutic interventions in the elderly.[17] In this review, the authors summarize current evidence from published registries and posthoc analyses of randomized trials addressing the specific features of AHF in the elderly and attempt to identify country-specific variations in aspects of clinical presentation and management by comparing results from the studies conducted in Europe and the United States.

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Table 1
Summary of studies comparing elderly versus younger patients with AHF

	Pulignano et al,[9] Prospective Registry (Italy)		Mahjoub et al,[16] Prospective Registry (France)		Fonarow et al,[15] Prospective Registry (OPTIMIZE-HF) (United States)		Metra et al,[11] Randomized Trial (VERITAS)		Komajda M et al,[12] Prospective Registry (EHFS II) (Europe)		Herrero-Puente et al,[8] Prospective Registry, (Spain)		Metra et al,[14] Randomized Trial (PROTECT)	
Date	1995–1998		2000		2003–2004		2003–2005		2004–2005		2007		2007–2009	
Patients (N)	3327		799		48,612		1347		3577		942		2033	
Age cutoff (y); %	<70; 69	≥70; 31	<80; 61.9	≥80; 38.1	<75; 47.2	≥75; 52.8	<72; 47.3	≥72; 52.7	<80; 79	≥80; 21	<80; 48.3	≥80; 51.7	<80; 79.1	≥80; 20.9
Male	78.7	64.7[a]	59.9	37.4[a]	56.2	41.1[a]	69.4	49.9[a]	66	44[a]	54.7	39.6[a]	21.5	11.2[a]
BMI or weight	NA	NA	NA	NA	90.2 kg	71.2 kg[a]	30.7	27.1[a]	26.9	26[a]	NA	NA	NA	NA[b]
CAD	37.8	50.4[a]	34.4	43.3[a]	43.7	47.5[a]	NA	NA	54	51	38.8	29.5[a]	6.7	3.4[a]
AF	19.2	30.7[a]	30.4	37.4[a]	21.7	39[a]	22.9	30.1[a]	36	48[a]	39.4	48.8[a]	12.9	14.5[a]
Hypertension	8.5	9.1	31	40.7[a]	71.9	70.1[a]	75.5	82.7[a]	61	67[a]	77	81.8[a]	NA	NA[b]
Diabetes	NA	NA	30	15.7[a]	27.3	22.8[a]	52.1	43.7[a]	34	29	50.1	34.5	12.1	8[a]
COPD	NA	NA	20.9	17.4	27.4	27.8	18.4	20.2	19	22[a]	18.7	23.7[a]	5.4	3.4[a]
Available echo	67	61[a]	88.9	68.5[a]	88.4	84.8[a]	100%	100%	92	81[a]	39.6	29.9[a]	NA	NA
HFpEF	22.6	32.6[a]	53	61.2[a]	40.8	55.3[a]	0%	0%	28	39[a]	32.3	48.3[a]	NA	NA[b]
LVEF cutoff	≥40%		≥50%		≥40		≥40% or WMI<1.2		≥45%		Not mentioned		≥40	
ACE inhibitors/ARBs	84.7	74.9[a]	68	42[a]	84.3	78.8[a]	NA	NA	81.2	76.1[a]	NA	NA	21.2	17[a]
β-blockers	13.1	6.9[a]	28	14[a]	84.7	79.9[a]	NA	NA	63.4	52.9[a]	NA	NA	22	16.8[a]
MRA	NA	NA	27	21	23.5	17.2[a]	NA	NA	49.8	38[a]	NA	NA	16	10[a]

Data presented as percentages (%) unless stated otherwise.

Abbreviations: ACE, angiotensin-converting enzyme; AF, atrial fibrillation; ARBs, angiotensin receptor blockers; BMI, body mass index; CAD, coronary artery disease; COPD, chronic obstructive pulmonary disease; EHFS, EuroHeart Failure Survey; LVEF, left ventricular ejection fraction; MRA, mineralocorticoid receptor antagonist; NA, not applicable; OPTIMIZE-HF, Organized Program to Initiate Lifesaving Treatment in Hospitalized Patients with Heart Failure; PROTECT, Prophylaxis for Thromboembolism in Critical Care; VERITAS trial, Value of Endothelin Receptor Inhibition With Tezosentan in Acute Heart Failure Studies; WMI, wall motion index.

[a] Statistically significant.

[b] Data not available but significantly higher in the elderly.