

## Editorial

# Heart Failure in Geriatric Patients

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Heart failure (HF) is described as a “Quintessential geriatric cardiovascular condition”. It is estimated that more than 50% of HF hospitalizations occur in adults age 75 years or older. Doubling the prevalence from 6% in those age 60 to 79 years to approximately 14% in those age >80 years; the mean age of adults with HF exceeds 70 years. The high prevalence and incidence of HF may be explained due to presence of higher prevalence HF risk factors, such as coronary artery disease and hypertension in aged population.<sup>1</sup> In another estimate, 80% of elderly patients suffer from this disease with both incidence and prevalence of the condition increasing with age. This is due to the progressive aging of the population as well as improved and better survival after cardiac insults, such as myocardial infarction.<sup>2</sup>

Data shows that acute HF is the leading cause of hospitalization in patients over 65 years, age group that includes “elderly patients”; the term is used now-a-days to age group of 70-80 years. It may be noted that this age group of patients is strikingly under-represented in large controlled clinical trials.<sup>2</sup>

Elderly patients show a different clinical profile when compared with younger patients. In particular, elderly patients with HF often present with complex comorbidities (hypertension, atrial fibrillation, peripheral vascular disease and coronary artery disease, valvular disease and kidney failure or anemia) and polypharmacy.<sup>2</sup> Polypharmacy is defined as the use of >5 medications, and is nearly universal in patients with HF, partially as a consequence of guideline-based care, and partially because of multimorbidity.<sup>1</sup>

Some authors figure out that over 70% of patients with prevalent HF above the age of 65 years have

normal EF.<sup>3</sup> ACC guideline stated similar data- “LVEF is preserved in at least two-thirds of older adults with the diagnosis of HF”. Among 1233 patients with HF aged >80 years, 40% mortality during mean 27-mo follow-up; survival associated with prescription of GDMT.<sup>4</sup>

Because of a better management of acute phase and comorbidities, HF incidence is increasing in elderly patients, with a prevalence rising to 10% among people aged 65 years or older as pointed out by Mozaffarian et al. in 2014.<sup>5</sup>

Challenges in the management of heart failure in elderly:

There are a number of issues that deserve attention in the heart failure management in elderly patients: presence of other morbidities is more frequent; polypharmacy leading to more drug-drug interaction; influence of age-related physiological changes of volume distribution that is linked to changes pharmacokinetics and pharmacodynamics of a drug; age related cognitive impairment.

The idea that  $\beta$ -blockers are effective in the elderly is well-documented. The SENIORS trial was a randomized controlled trial (RCT) that specifically evaluated the efficacy of nebivolol in patients aged  $\geq 70$  years. Results showed a 14% relative risk reduction in the composite risk of all-cause mortality or cardiovascular hospital admission compared to placebo. The effect of nebivolol was similar in the subgroup of patients with chronic renal failure. To avoid the major common side effects such as bradycardia or hypotension,  $\beta$ -blocker therapy should be initiated with the minimum recommended dose and up-titrated at intervals of no less than two weeks towards the target dose.<sup>6</sup>

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RAASi (ACEi and ARBs in ACEi intolerant patients) are indicated in the geriatric population similarly to the younger age group. ARNi is found to be as safe and as effective in elderly. In PARADIGM-HF trial that showed superiority of ARNi over ACEi, a large proportion of patients were > 65 years.<sup>7</sup>

Aldosterone antagonists are equally effective as shown in the RALES, the EPHEMUS, and the EMPHASIS-HF trials. Importantly a closer patient monitoring to prevent adverse events such as hyperkalemia, renal dysfunction, and hypotension is necessary in elderly patients.<sup>8-10</sup>

The SHIFT trial demonstrated that, in HF patients with sinus rhythm, ivabradine reduces cardiovascular mortality and HF hospitalization in young as well as in elderly patients. Digoxin is Class IIb indication but one has to keep in mind that toxic effects and withdrawal are common in elderly. Keeping serum digoxin level between 0.5 -0.9 ng/ ml is desirable.<sup>11,12</sup>

SGLT-2i, Empagliflozin, is a first line drug in the management of HFrEF across all age groups but higher risk of volume depletion related side effects and urinary infection is described.<sup>13</sup> Empagliflozin has been found to be beneficial for HFpEF which is more common in elderly HF patients.<sup>14</sup> It is approved for use in HFpEF patients.

Santangeli and colleagues,<sup>15</sup> pooling together the results of five randomized clinical studies, found that ICD was not associated with a significant reduction in mortality in patients aged ≥60 years (HR 0.81; 95% CI 0.62 to 1.05) while a pronounced 35% reduction in mortality was seen in patients aged < 60 years (HR 0.65; 95% CI: 0.50–0.83). The authors therefore concluded that prophylactic ICD implant did not improve survival in elderly patients. Kong et al. tested the effectiveness of primary prevention ICD on patients aged ≥65 years and ≥75 years and found a significant improvement in overall survival after ICD implant in patients aged ≥65 years (HR 0.62; 95% CI 0.49–0.78) and, although of lesser magnitude, even in patients aged ≥75 years (HR 0.70; 95% CI 0.51–0.97).<sup>16</sup>

Direct data on the benefit of CRT in elderly patients is still limited. Trials like COMPANION trial, MIRACLE and MIRACLE-ICD trials, MADIT-CRT showed benefit in all age groups. Patients aged > 75 years have the same chance to

meet the proposed clinical and echocardiographic criteria as their younger counterparts.<sup>17-20</sup>

There are “real world” data that showed that performance following CRT implants in patients over 75 years of age is good as their younger counterparts in functional improvement, LVEF, and quality of life while showing a more pronounced reduction of LV end-systolic volume and a much greater QRS reduction over 12-month follow-up. Resynchronization therapy offers significant advantages in the elderly, as it does not require up-titration and is not limited by poor compliance or drug interaction.

Osmanska & Jhund in their review considering updated data noted that the average age of patients with HF is 77 years and in HFrEF patients the efficacy of pharmacotherapy does not vary by age and each of these therapies should be considered in all patients, irrespective of age.<sup>21</sup> Other factors such as co-morbidities like renal dysfunction may limit the use of some of these drugs in the elderly. The efficacy of RAASi in the elderly with HFrEF is not in question given the vast number of patients studied in multiple trials with no evidence of any age by treatment interaction. Decision making with regard to device therapy is more complex. In PARADIGM-HF trial, the mean age of patients was 64 years; however, nearly one in five patients (18.6%) were aged 75 years or older. The beneficial effect of sacubitril/valsartan was consistent across the age spectrum for all of the end-points studied, including all-cause mortality.

### Conclusion:

Although older patients are less represented but not excluded in major clinical trials, all HF therapies, from drugs to devices, are still recommended in this population. However, the choice of the best treatment should be personalized, considering more aspects beyond HF such as comorbidities, frailty, social, and economic background and quality of life.

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### Conflict of Interest - None.

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