



Editorial

Heart Failure in Transition: Is It Really Better to Be Younger?

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See article by Wong et al., pages 1472–1477 of this issue.

Heart failure (HF) is a major cause of morbidity and mortality globally and is regarded by many as an epidemic.^{1–3} Although we know that cardiovascular disease (CVD) is the most common cause of death globally, we do not know how many of these deaths are caused by HF. Further, given that the majority of current data on HF are from elderly populations in high-income countries (HICs), it is unclear whether and how the age at HF presentation would impact morbidity and mortality in younger populations.

The article by Wong et al. published in the current issue of the *Canadian Journal of Cardiology* reports on the influence of age on outcomes in patients with HF. The data were derived from a health care setting in a HIC with a single-payer system and advanced health care infrastructure and health services.⁴ Administrative databases from the province of Alberta, Canada from 2002–2014 with data on nearly 35,000 patients with HF were retrospectively examined for patient characteristics, health care use, and survival in younger compared with older patients with HF. The majority (85%) of patients who presented with their first episode of HF were 65 years of age or older. There were fewer younger patients: 9.7% were 55–64 years, 3.8% were 45–54 years, and 1.4% were 20–44 years. Although overall absolute incident HF hospitalizations increased with increasing age at ≥ 20 years, there were trends toward decreasing incident HF hospitalizations among those aged ≥ 65 years compared with those in the same age group in previous years. This trend was not observed in younger patients in whom HF hospitalization incidence increased over the years. At 1 year after presentation, unadjusted mortality among hospitalized patients was highest (35.3%) in patients with HF aged ≥ 65 years. In contrast, 1-year mortality rates were lower in younger individuals, at 12.4%, 10.6%, and 16.6% in those aged 20–44 years, 45–54 years, and 55–64 years, respectively. These observations were in individuals living in a HIC with a single-payer highly structured health care system providing uniform care in which accessibility and

affordability would not likely be major impediments to care.⁵ However, are these findings generalizable to populations in other HICs or in low- to middle-income countries?

The observation that the incidence of HF hospitalization showed a decreasing trend in those aged 65 years or older may be related to general improvements in the treatment of coronary artery disease, better management of CVD risk factors, and treatment of the acute and chronic diseases that were observed in Canada and other Western countries.^{6,7} However, in this current cohort, nearly three-quarters of individuals in this subgroup died within 5 years.⁴ Other data have also suggested that the incidence of HF in patients ≥ 65 years decreased significantly during the early months after an acute myocardial infarction, but by 3 years the incidence of HF had caught up in this segment of the population.⁸ This suggests that despite apparent improvements in management and outcomes, the long-term survival from HF in this age group remains unchanged.

The observed difference in incidence of HF hospitalization in the older and younger patients reported in this article was also noted in the Meta-Analysis Global Group in Chronic Heart Failure (MAGGIC) pooling project and the Swedish Heart Failure Registry study.^{9,10} This difference suggests that the underlying cause of HF may differ between the two groups. Although the majority of the elderly continue to experience HF as a result of cardiovascular disease and risk factors such as hypertension, coronary artery disease, atrial fibrillation, and diabetes, alone or in combination, this does not seem to be the case in younger patients with HF. Higher proportions of younger patients with HF had other underlying causes, such as idiopathic cardiomyopathy, congenital heart disease, and other nonischemic causes.^{9–11} Wong et al.⁴ reported in their article that the rates of congenital heart disease and asthma were higher in younger patients with HF than in their older counterparts. The Candesartan in Heart Failure Assessment of Reduction in Mortality and Morbidity (CHARM) Programme investigators reported similar findings, with idiopathic cardiomyopathy more prevalent as the underlying cause in the young.¹¹

The MAGGIC study analyzed outcomes in younger patients with HF by pooling data from 24 prospective observational studies and 7 randomized trials in 41,926 patients with HF, mostly from Western Europe.⁹ They showed that the prevalence of HF was much lower in younger than in

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older populations, with rates comparable to those reported in the current study.⁴ Mortality was also lower in younger than in older patients with HF. The MAGGIC analysis observed that compared with the elderly (≥ 80 years), younger patients (< 40 years) were more likely to be male individuals (71% vs 48%, respectively) and have idiopathic cardiomyopathy (63% vs 7%, respectively). As expected, comorbidities such as hypertension, myocardial infarction, and atrial fibrillation were less common in younger patients compared with older patients with HF. Mortality was relatively low in the young: 6.7% at 1 year, 11.7% at 2 years, and 16.5% at 3 years.

These data suggest that there are sufficient differences in underlying causes of HF between younger and older segments of the population to account for the differences in HF incidence. The older population more often has traditional CVD comorbidities and risk factors, such as ischemic heart disease, hypertension, atrial fibrillation, and diabetes, whereas the younger population also have other causes that are seen less often in the elderly. Improvements in treatment of the traditional CVD comorbidities and risk factors likely have resulted in improvements in HF in the elderly. Fewer younger patients have these traditional comorbidities and risk factors, the treatment of which would not be expected to affect diseases such as cardiomyopathy and congenital heart disease. This would therefore result in little effect on prognosis.

Further, data from the current study and others suggest that younger patients with HF may be less likely to be aware of their condition and comorbidities, as well as less symptomatic, and therefore less likely to seek medical attention.⁴ It has also been suggested that younger patients, particularly male individuals, may be more prone to risky behaviours such as recreational drug use and alcohol ingestion, causing the HF.⁴ All these factors may contribute to a relatively higher morbidity and mortality than one would anticipate in younger patients with HF.

It is important to note that the populations in these 3 studies are not strictly comparable ("younger" was defined as age < 40 years in the MAGGIC study, < 45 years in the Swedish registry, and 20-44 years in the present study). Another difference was that the current and Swedish studies included unselected populations (administrative databases), whereas the MAGGIC analysis pooled data from registries and study databases, presumably involving a certain degree of participant selection. Nevertheless, the MAGGIC analysis suggests that many of the younger patients with HF were more likely to have idiopathic cardiomyopathy as the underlying cause and were also more likely to have congenital heart disease. The 3 studies are similar, however, in observing lower mortality in younger compared with older HF populations.

Although inclusive from the population perspective, administrative databases do not have detailed information on specific HF causes or comprehensive assessments of cardiac morphologic features and function (echocardiography, nuclear cardiology, magnetic resonance imaging, and cardiac catheterization studies) or details of medical and device therapies that relate to the causes and outcomes, respectively, of patients with HF. There may be considerable diagnostic uncertainty (even inaccuracy) about a diagnosis of HF and other conditions taken from administrative databases derived from medical records. The questions raised,

however, can form the basis for further systematic studies to improve detection, management, and outcomes in HF.

This study by Wong et al.⁴ highlights the impact of nontraditional causes of HF in younger individuals compared with their elderly counterparts, resulting in a dichotomy in HF hospitalization incidence between the 2 groups. Similar observations were made in other studies. This can potentially impact the burden of HF on both the affected individuals and the health care system. Whether or not this will be the case depends on the development of HF in other populations, confirming this observation. Currently, we believe that being young is associated with a better prognosis. Only the future will tell whether this will remain so.

Disclosures

The authors have no conflict of interest to disclose.

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