Epidemiology of heart failure in Hong Kong, 1997

YT Hung, NT Cheung, S Ip, H Fung

Objective. To analyse the epidemiology of heart failure in Hong Kong, 1997.
Design. Retrospective study with 1-year follow-up.
Setting. Accident and emergency departments of 11 hospitals of the Hospital Authority, Hong Kong.
Patients. All patients admitted to hospital in 1997 with heart failure as the primary diagnosis, as shown in their discharge summaries.
Main outcome measures. Demographic data, incidence and prevalence of heart failure, and survival status up to 1 year.
Results. There were 4589 new and 1614 old cases of heart failure that required hospital admission in 1997. The largest age-group was the 75- to 84-year group; 85% of the patients were older than 65 years and 56% of the patients were female. The incidence of heart disease increased with age, approximately doubling with each decade of age and reaching an annual incidence of 14 per 1000 men and 20 per 1000 women older than 85 years. The 1-year mortality rate also increased with age, reaching 40% for patients older than 85 years (overall, 32%).
Conclusion. Heart failure is a common problem and has high mortality, especially in elderly patients. Detailed analyses of the aetiology and early preventive measures are needed to alleviate the problem.

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Key words: Age factors; Heart failure, congestive; Hong Kong/epidemiology; Incidence; Mortality; Prevalence

Introduction

Heart failure is a syndrome that describes the inadequacy of the pumping function of the heart, which is often the end result of various insults such as myocardial infarction and hypertension. Heart failure is an increasingly important public health problem in the western world,[1] and it was the 12th leading cause of hospitalisation in 1996 in hospitals of the Hospital Authority (HA), Hong Kong.[2] The HA, which has the administrative responsibility for all public hospitals in Hong Kong, acquires and keeps in-patient clinical data of various disease groups. Apart from a previous report from the Prince of Wales Hospital,[3] there are few local epidemiological studies of heart failure. This study aimed to provide an account of the overall pattern of heart failure in Hong Kong, by analysing the HA in-patient records for 1997.

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Materials and methods

An Integrated Patient Administration System (IPAS) has been installed in 11 major HA hospitals that have accident and emergency departments. Using IPAS has allowed the integrated documentation of patient admissions to these 11 hospitals. All cases of heart failure as a primary diagnosis—that is, code 428 of the International Classification of Disease, Ninth Edition (ICD-9)—were identified from discharge summaries of year 1997.[4] The death status during hospitalisation and at the time of patient discharge was checked in each case. The survival status of all patients was further verified with the Hong Kong Death Registry at 1 year after the date of recruitment of the last patient.

New cases were defined as those with no IPAS record in the previous 2 years, thereby separating them from old cases in which the patients may have had a different survival rate. Demographic data were retrieved and analysed, and patients were grouped according to age as follows: <54 years, 55 to 64 years, 65 to 74 years, 75 to 84 years, and >85 years. The incidence and prevalence of heart failure were calculated using population data from the Hong Kong Census and Statistics Department.

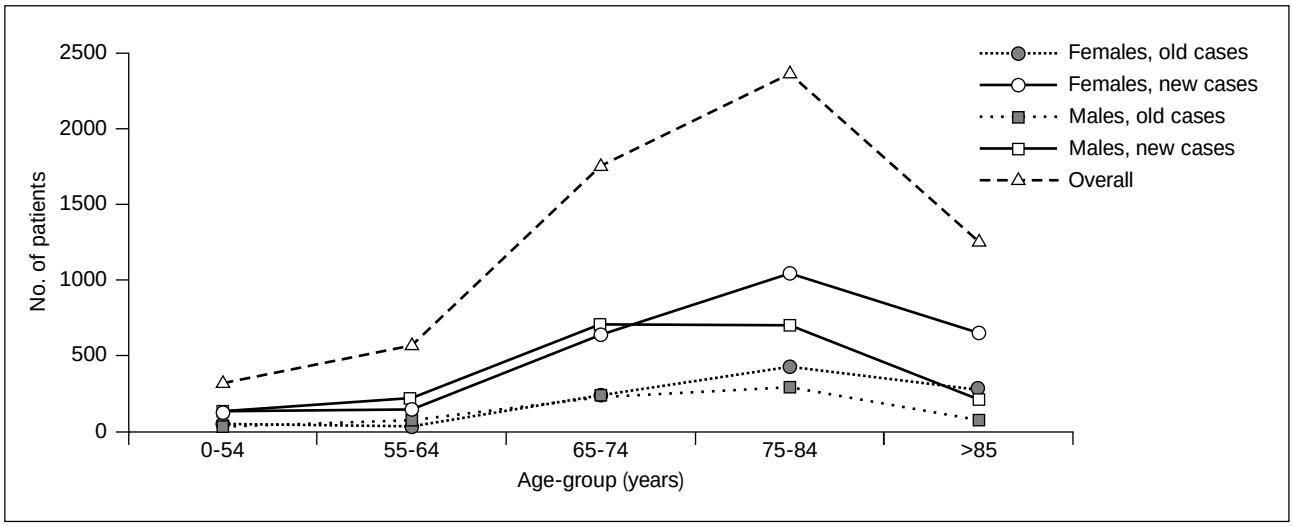

Fig 1. Number patients with heart failure who required hospitalisation, 1997

Results

There were 4589 (74%) new and 1614 (26%) old cases of heart failure that required hospitalisation in 1997. The ratio of new to old cases was 2.8:1. Of the 6203 patients, 56% were female. The mean age of the female patients was 77.5 years and that of the male patients was 72.4 years. Most of the patients were elderly, with 85% of them being older than 64 years; the largest age-group was the 75- to 84-year group (Fig 1).

The incidence of heart failure was calculated using the number of new cases as the numerator. There was steep rise of incidence with increasing age (Fig 2). The overall incidence rate was 0.7 per 1000 population. In the >85-year age-group, the incidence was 20 per 1000 women and 14 per 1000 men. The prevalence of heart failure that required hospitalisation was calculated by adding the number of old and new cases of heart failure for each age-group, as shown in Fig 3. Both incidence and prevalence rates showed a rising trend with age.

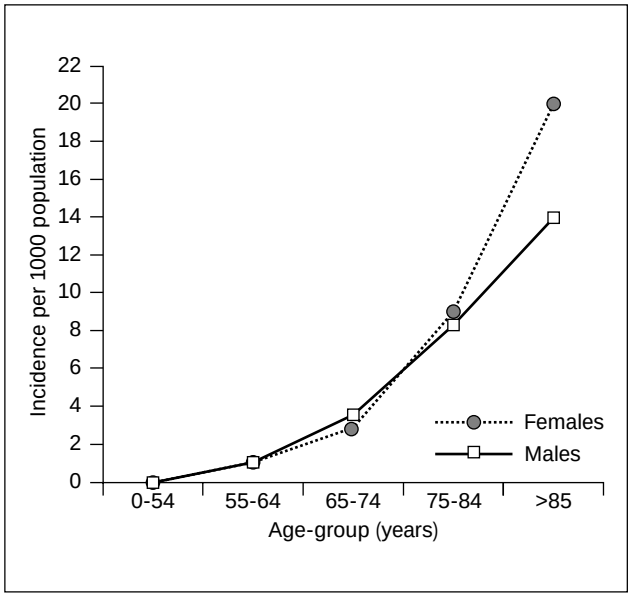

Fig 2. Incidence of heart failure, 1997

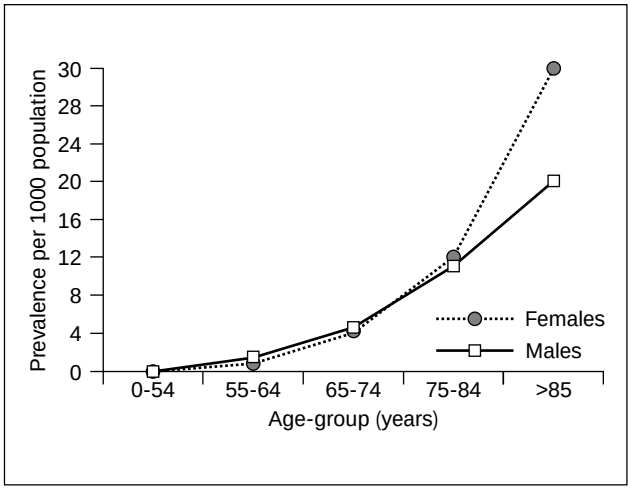

Fig 3. Prevalence of heart failure, 1997

Old cases of heart failure had a 5% to 10% higher mortality rate than new cases across all age-groups (Figs 4 and 5). The 1-year mortality rates of the male and female patients were similar, and showed a rising trend with age (Fig 6). The mortality rate reached 40% for those aged >85 years (overall, 32%). Of the patients who died in the first year, 86% died after they had been discharged from hospital.

Discussion

This study included the majority of patients in Hong Kong with heart failure in 1997, but it had the limitation that their diagnosis was not verified by reviewing case notes and instead relied on the coding made

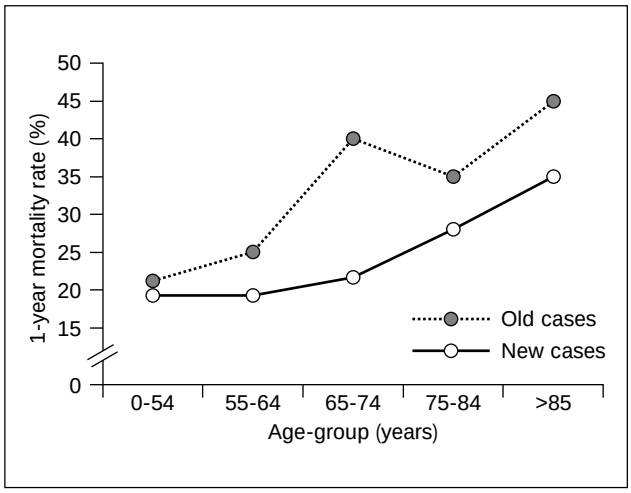

Fig 4. 1-year mortality rate of female patients,1997

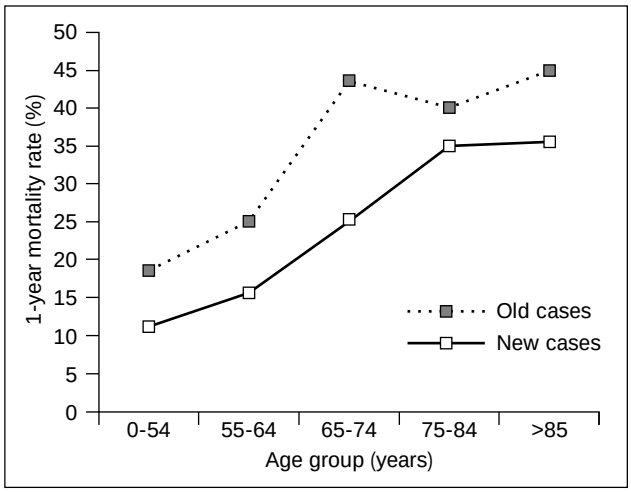

Fig 5. 1-year mortality rate of male patients,1997

by physicians. As the discharge summaries did not contain data concerning the aetiology of heart failure or whether it was systolic or diastolic failure, direct comparison with other studies is difficult. In addition, out-patients who died of heart failure before hospital admission were not included in this study. Despite these limitations, this study is the first to analyse the overall pattern of heart failure in Hong Kong.

An earlier study from the Prince of Wales Hospital showed that 56% of the 730 patients who were admitted for heart failure were females. The mean ages of the female and male patients were 75.6 and 70.6 years, respectively,[3] which are similar to those found in this study. The incidence rates of new cases that required hospitalisation in this study for the 55- to 64-year and 65- to 74-year age-groups were 0.9 and 3.3 per 1000 men, respectively, and 0.7 and 2.7 per 1000 women, respectively. When new and old cases were grouped together, the corresponding prevalence rates were found to be 1.3 and 4.4 per 1000 men and 0.9 and 3.9 per 1000 women. These rates are lower than the

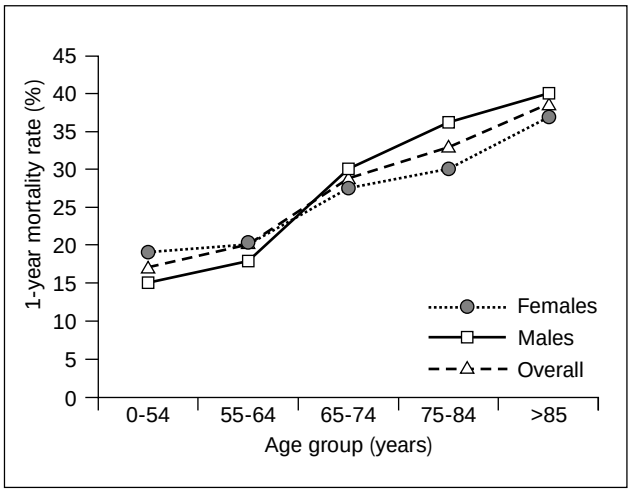

Fig 6. 1-year mortality rate of all patients,1997

figures quoted in reports from the West. The incidence rates per 1000 population were 2.63 for men and 1.29 for women in the 61- to 65-year age-group in a 1993 study from Sweden.[5] There was no mention in that study, however, about the separation of new and old cases, but diagnoses were confirmed by reviewing hospital records against diagnostic criteria. The reported incidence rates per 1000 population in the Mayo Clinic study for age-groups 60 to 64, 65 to 69, and 70 to 74 years were 2.8, 5.5, and 16.2, respectively, for men and 0.8, 1.8, and 4.8, respectively, for women.[6] The study included only new cases but required diagnostic confirmation from a review of the medical records. The difference between the results of studies from the West and those of this study may be related to a difference in case definition. Furthermore, the Mayo Clinic study included both in- and out-patients, thus resulting in a larger sample population.

Of New Zealand's population of approximately 4 million between 1988 and 1991, there were 5000 patients with heart failure who required a total of 8000 hospital admissions per year; two thirds of them were older than 75 years.[7] That study included hypertensive heart diseases, primary cardiomyopathy, alcoholic cardiomyopathy, myocarditis, and postoperative heart failure, and thus would have recruited a broader range of patients. The population in Hong Kong was 6.5 million in 1997, among which there were 6200 patients with heart failure and a total of 10 293 acute episodes. The proportion of patients older than 75 years was 58%, which is similar to the figure from the New Zealand study.

The 1-year mortality rate of 32% in this study is similar to that reported in the Mayo Clinic study (34%).[6] The Mayo Clinic study, however, included both in- and out-patients. In a study from Scotland,

the in-patient case fatality rate in 1990 was found to be 18%, which is much higher than the figure found in this study (4%).[8] The difference might be partially related to the improvements of medical therapy over the past 10 years. The Framingham study reported a 2-year mortality rate of 37% in men and 33% in women, whereas the 1-year mortality rate for new and old cases combined was 32% and 31% for men and women, respectively.[9] On the other hand, if only new patients were included, the corresponding rates would have been 28% and 29% for men and women, respectively. The Framingham study included out-patients, who may have been in an early stage of their disease, and hence they may have had a better survival.

This study has shown that heart failure is mainly a problem among the elderly and the incidence and mortality rates increase with age. Heart failure will become an increasingly important global public health issue, particularly in ageing societies such as Hong Kong. Aetiological studies are required to help decision-makers target resources towards implementing preventive measures.

References

1. Garg R, Packer M, Pitt B, Yusuf S. Heart failure in the 1990s: evolution of a major public health problem in cardiovascular medicine. J Am Coll Cardiol 1993;22(Suppl):3S-5S.
2. Statistics and Health Information Section, Hospital Authority, Hong Kong. Report on 1996 disease profile. Hong Kong: Hospital Authority; 1996:2.
3. Sanderson JE, Chan SK, Chan WW, Hung YT, Woo KS. The aetiology of heart failure in the Chinese population of Hong Kong—a prospective study of 730 consecutive patients. Int J Cardiol 1995;51:29-35.
4. World Health Organization. International classification of diseases. Ninth revision: Clinical modification. Geneva: WHO; 1993.
5. Andersson J, Waagstein F. Spectrum and outcome of heart failure in a hospitalized population. Am Heart J 1993;126:632-40.
6. Rodeheffer RJ, Jacobsen SJ, Gersh BJ, et al. The incidence and prevalence of congestive heart failure in Rochester, Minnesota. Mayo Clin Proc 1993;68:1143-50.
7. Doughty R, Yee T, Sharpe N, NacMahon S. Hospital admissions and deaths due to congestive heart failure in New Zealand, 1988-91. NZ Med J 1995;108:473-5.
8. McMurray J, McDonagh T, Morrison CE, Dargie HJ. Trends in hospitalization for heart failure in Scotland 1980-1990. Eur Heart J 1993;14:1158-62.
9. Kannel WB, Belanger AJ. Epidemiology of heart failure. Am Heart J 1991;121:951-7.