

CLINICAL STUDY

The incidence and the characteristics of heart failure patients at a large medical department

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Abstract

Introduction: Chronic heart failure (HF) has a prevalence of 6–10 % in patients above the age of 65 years, leading to high mortality, morbidity and re-hospitalization.

Aim: To analyse the incidence and the characteristics of patients with HF in a medical department.

Patients and methods: 941 patients (males 424, females 517 with an average age of 64 years and 67 years respectively), hospitalized from 1.9.1998 to 28.2.1999 at the 1st Internal Department of the University Hospital. A retrospective analysis of their files: age, diagnosis, duration of hospitalization, and in those patients with HF: the occurrence of risk factors and clinical events (stroke, myocardial infarction, and atrial fibrillation).

Results: We have analyzed the incidence of diseases at a medical department where 58.7 % of patients suffered from cardiovascular diseases. Patients with HF represented 13.9 % of all hospitalized patients. Among the risk factors dominated hypertension, diabetes, obesity, hyperlipidemia and smoking. The average duration of hospitalization was 12.66 days in men and 13.67 days in women. The hospitalization period was 15.6 days in hypertensive diabetic males whereas in females it was 15.3 days. These patients were hospitalized in their 5th decade with the incidence of HF increasing with age. Their mortality was 11.5 % while the overall mortality was 9.7 % among all patients hospitalized. Those patients who died suffered from poly-morbidity.

Conclusion: The prevalence of HF in our patients was 13.9 %. This value is higher than the data from literature. These patients suffered from poly-morbidity (hypertension: 53–75 %, diabetes: 30 %, obesity: 33–38 %, hyperlipidemia: 20–50 %, smoking: 11–32 %, myocardial infarction: 41–50 %) and had a high mortality. (Tab. 5, Fig. 2, Ref. 7.)

Key words: chronic heart failure, duration of hospitalization, mortality, morbidity, diabetes mellitus, hypertension.

Heart failure (HF) is a pathophysiological condition in which the heart is unable to function as a pump meeting the normal cardiac output to suit the metabolic requirements of different organs under a normal filling pressure (1). Clinicians define HF as a syndrome of ventricular (mostly left) dysfunction with a decreased capacity under stressful conditions.

It seems that 1.5–2 % of population suffers from chronic HF with the prevalence of this disease reaching 6–10 % in those patients above the age of 65 years (2, 3). The incidence of this disease is sharply increasing in Slovakia in the last decade. One of the reasons behind this is the growing population average age with the decline in mortality secondary to other different cardiovascular diseases (ischemic heart disease, myocardial infarction, cardiomyopathy). A lot of patients have asymptomatic HF, howe-

ver their symptoms may appear in the near future. HF today is one of the diseases where both incidence and prevalence grow sharply (2).

HF patients are often hospitalized at internal medical departments and suffer from poly-morbidity and hence require extensive pharmacotherapy that represents a significant, financial burden on medical services. It is expected that one third of HF patients are re-hospitalized during the following 90 days after their

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Tab. 1. The number of different systemic diseases and the average duration of patients hospitalization in days.

Disease	Number of hospitalized patients			Average hospitalization period (in days)	
	All	Males	Females	Males	Females
CVD	459	199	260	12.75	13.29
Stroke	94	38	56	13.21	10.7
GID	163	71	92	12.71	10.29
RTD	32	21	11	16.2	8.18
RD	21	8	13	14.43	9.9
OD	54	29	25	18.28	14
MD	32	17	15	15	13.91
O	86	42	44	9.97	11.67

Tab. 2. The number of patients without chronic HF in individual decades according to sex.

Decade	Males		Females	
	Number	%	Number	%
11–20 y	1	0.3	1	0.2
21–30 y	22	6	12	2.7
31–40 y	15	4.1	17	3.8
41–50 y	37	10.2	33	7.4
51–60 y	48	13.2	49	11
61–70 y	57	15.7	86	19.3
71–80 y	125	34.3	171	38.3
81–90 y	47	12.9	69	15.5
91–100 y	12	3.3	8	1.8
Together	364		446	

discharge (5). Recently it is required to define the incidence and character of this disease at our medical departments.

In certain hospitalized patients we decided to analyse, in a long period of time, the incidence of their diseases according to individual systems and to find out the magnitude of HF incidence in comparison to other diseases and to characterise in details those patients with this disease.

Patients and methods

The followed-up group of patients included 941 patients (424 men, average age: 64 years, range 18–94 years and 517 women, average age 67 years, range 18–94 years). They were hospitalized at the I. Department of Internal Medicine FN, Bratislava, in the period between 1.9.1998–28.2.1999, in other words in a half year interval.

Retrospectively, we have analyzed the duration of hospitalization, patient's age during hospitalization, the main diagnosis for which they were admitted – cardiovascular disease (CVD), stroke (S), gastrointestinal disease (GID), respiratory tract disease (RTD), renal disease (RD), oncological disease (OD), metabolic disease (MD) and others (O). Gender was analyzed individually.

Considering the group of patients with CVD we studied a subgroup of patients with HF that has been analyzed separately in detail for individual sex according to age, occurrence of main atherosclerotic risk factors as diabetes mellitus (DM), hypertension (HTN), hyperlipidemia (HL, i.e. hypercholesterolemia (>5.2 mmol/l), hypertriglyceridemia (>2.1 mmol/l) or both), overweight and obesity (OB, (body mass index >27 kg/m²)), smoking also according to the occurrence of other diseases or cardiovascular events (stroke, myocardial infarction, atrial fibrillation). In addition to that we analyzed the duration of hospitalization of HF patients. All the required information were obtained from files and discharge reports.

Results

There were 1050 patients hospitalized in the six-month period, but we could get access to 941 files only. The rest (that represents 10 % of the total sum of patients) was engaged in another study analysis. Among 941 patients a subgroup of 459 patients (48.7 %) represented those with cardiovascular problems. In the same time 131 patients (13.9 %) were suffering from HF which represents 28.5 % of patients with cardiovascular diseases. 91 patients died (9.7 %) of all the patients followed-up. 15

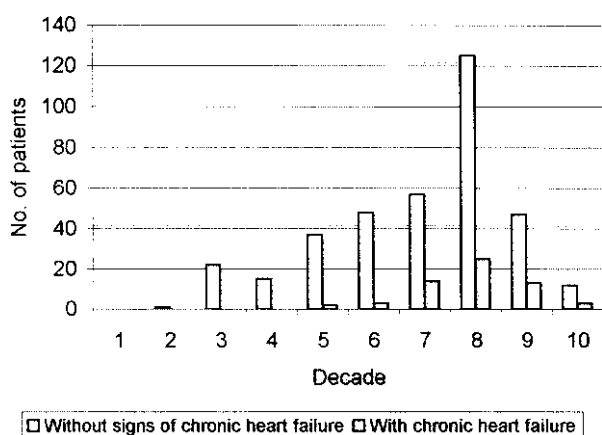


Fig. 1. The number of men in individual decades.

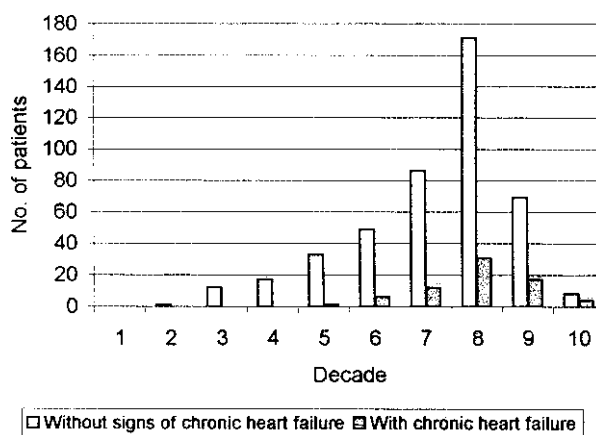


Fig. 2. The number of women in individual decades.

patients with HF died (11.45 %) out of all patients with chronic HF and 76 patients in the group of patients without HF (9.38 %). The second most commonly affected system causing hospitalization was the gastro-intestinal system. On third position was stroke that is usually randomized under cardiovascular diseases and in this case the total cardiovascular problems including the stroke would represent 58.7 % of all hospitalized cases. The average hospitalization period was 12.84 days (males 14.07 days and females 11.49 days).

The magnitude of different systemic diseases and the duration of hospitalization are shown in Table 1.

Patients without chronic HF (all together 810 patients) were already hospitalized in their second decade (both sexes). The highest number of patients hospitalization appeared in their 8th decade Table 2. The average age in men was 64 years whereas in women it was 66.7 years.

In the group of patients with chronic HF we had 60 men and 71 women. No cases of HF appeared in the second, third or fourth decades whereas the highest number of HF patients appeared in the 8th decade (Tab. 3, Figs 1 and 2). The average age of

patients with chronic HF was 74.7 years in men and 75.5 years in women.

In the group of patients with chronic HF 30 % of men and 31 % of women had DM, 53 % of men and 75 % of women had HTN. Both DM and HTN appeared in 22 % of men and 27 % of women, while 22 % of men and 30 % of women did not have DM nor HTN. 32 % of men and 11 % of women were smokers. 33 % of men and 38 % of women were suffering from overweight and obesity. It was also noticed that 20 % of men and 50 % of women were diagnosed as hyperlipidemic (Tab. 4).

12 % of men and 13 % of women suffered from strokes (S) whereas myocardial infarction (MI) was recorded in 50 % of men and 41 % of women. The incidence of atrial fibrillation was 27 % in men and 30 % in women (Tab. 5).

The average period of hospitalization in diabetics was 13.83 days for men and 14.67 days for women. Figures in hypertensives were 13.28 days for men and 14.36 days for women, 15.62 days for hypertensive diabetic males and 15.25 days for hypertensive diabetic females showing the longest periods of hospitalization.

Tab. 3. The number of patients with chronic HF in different age groups according to sex.

Decade	Males		Females	
	Number	%	Number	%
11—20 y	0	0	0	0
21—30 y	0	0	0	0
31—40 y	0	0	0	0
41—50 y	2	3.3	1	1.4
51—60 y	3	5	6	8.5
61—70 y	14	23.3	12	16.9
71—80 y	25	41.7	31	43.6
81—90 y	13	21.7	17	23.9
91—100 y	3	5	4	5.7
Together	60		71	

Tab. 4. The incidence of risk factors in patients with chronic HF according to sex.

	Males		Females	
	Number	%	Number	%
DM	18	30	22	31
HTN	32	53	53	75
DM+HTN	13	22	19	27
Neither DM nor HTN	13	22	21	30
Smoking	19	32	8	11
Obesity	20	33	27	38
Hyperlipidemia	12	20	25	50

Tab. 5. The incidence of complications in patients with chronic HF according to sex.

	Males		Females	
	Number	%	Number	%
Stroke	7	12	9	13
Post MI	30	50	29	41
Atrial fibrillation	16	27	21	30

In that group of patients with chronic HF 15 of them died (8 males and 7 females). Their average age was 81.9 in men and 77.3 in women. 5 of them suffered from DM, 11 were hypertensives, 5 were hypertensive diabetics while 4 patients were free from DM and HTN. It was noticed that 7 patients of those who died had atrial fibrillation.

Discussion

We have analyzed the reasons of patients hospitalization at a large medical department (118 beds including the coronary care unit and the metabolic unit) during a period of 6 months. A total number of 941 patients were hospitalized of whom 131 patients (14 %) suffered from chronic HF. This magnitude exceeds the figures obtained from literature (2, 3, 5) where the examined sector was from normal population and not from hospitalized patients. We realise that the hospital department concentrates these patients so this percentage as a result is high. From 941 hospitalized patients 91 died (9.7 %) and the mortality in patients with HF (15 among 131, 11.5 %) was higher than that in patients without chronic HF (76 among 810 patients, 9.7 %).

Mortality is highest in those patients with HF when compared with those with other diseases, the matter that reflects the bad prognosis in these patients (6).

Most patients were hospitalized for cardiovascular reasons (459, i.e. 49 %) with an average period of 12.7 days for men and 13.3 days for women whereas the average period of hospitalization for all patients in general was 14.07 days for men and 11.49 for women. If we consider patients with stroke as patients with cardiovascular diseases the number of patients rises (to 553) and their percentage reaches a figure of 58.7 % out of the total number of hospitalized patients.

The longest period of hospitalization was shown by patients with malignancies (18.3 days in men and 14.0 days in women the figures that exceed the average period of hospitalization by 4 days in men and 2.5 days in women) followed by male patients with respiratory problems (16.2 days i.e. 2 days more than average) and female patients with metabolic diseases (13.9 days i.e. 2.5 days more than average) (Tab. 1). To the length of hospitalization of patients with malignancies contributed their malnutrition, stress and social rehabilitation. A lot of them could be transferred to treatment centres as patients with chronic diseases.

Patients with cardiovascular disease with or without signs of chronic HF were most frequently hospitalized in the age between 71 and 80 years in both sexes. It was also noticed that among hospitalized patients with chronic HF there were patients of an age between 41–50 years however even younger patients (11–20 years) were recorded as hospitalized due to other diseases than chronic HF. These results agree with the data from epidemiological studies of chronic HF where it was shown that this disease may appear at an age of 40 years and its occurrence increases with age (Tables 2 and 3, Figs 3 and 4) (2, 3, 6). The experience of other authors sheds the light on the early re-hospitalization of these patients after their discharge. Up to 1/3 of chronic HF patients are re-hospitalized in a period of three months after their discharge (5).

Chronic HF is the end result of long-lasting ischemic heart disease (IHD) and hypertension, that is why these two diseases in addition to other risk factors of atherosclerosis are so frequently observed in patients with HF. 30 % of our male patients were diabetics, whereas 31 % of the females were diabetics, hypertensive males 53 %, hypertensive females up to 75 %, the combination of diabetes and hypertension was observed in 22 % of males and 27 % of females. Patients without diabetes or hyper-

tension contributed to 22 % of males and 30 % of females (by other words the most healthy patients). Smoking habit was noticed in 32 % of men and 11 % of women so 3 times more frequently. Hyperlipidemia was positive in 20 % of males and 50 % of females the results that agree with the figures obtained from other studies (2, 3). In our group of patients with chronic HF 12 % of males and 13 % of females suffered from strokes whereas 27 % and 30 % were the figures of atrial fibrillation occurrence in males and females respectively. Up to 50 % of males and 41 % of females had myocardial infarctions, this stress the fact that myocardial infarction represents a stationary status between IHD and HF that develops as one of its complications. These patients with HF are frequently suffering from diabetes mellitus so asymptomatic myocardial infarction may occur that can be often discovered accidentally during the investigations of the reason behind HF.

The longest hospitalization was in those diabetic hypertensives (15–16 days) which is 2–3 days longer than the average hospitalization period of the whole followed-up patients in general (the average hospitalization period is 12.8 days). The reason behind that could be the fact that these patients were more liable and had the most severe form of HF. It is interesting that atrial fibrillation did not prolong the hospitalization period.

15 patients with chronic HF died in a high average age (81.9 years in males and 77.3 in females). Of these 1/3 suffered from diabetes, 2/3 from hypertension, and 1/3 from both diabetes and hypertension. 1/2 of these patients had atrial fibrillation. The age and the co-incidence of other risk factors explain the reason of death. These patients were frequently re-hospitalized and had a long term follow-up in our cardiac out-patients, so had a good educational status, good compliance to pharmacological and non-pharmacological treatment, and last but not least an immediate interference to treat the occurring complications, all resulting in a long term survival.

Our analysis of the hospitalized patients proves the experience of other authors (2, 3, 5, 6, 7). Chronic HF is a disease of elderly and affects both sexes. However the incidence of HF in our group of patients (hospitalized) was higher than that mentioned by other authors (epidemiological studies considered non-hospitalized patients). Out of the risk factors known dominated hypertension, diabetes and the history of myocardial infarction.

Patients with chronic HF not only have a high morbidity, worsened quality of life and frequent hospitalization but also a very high mortality. They represent a huge burden on health expenditure. So they require both experienced early diagnosis and intensive treatment.

References

1. **Braunwald E.** Heart disease. Philadelphia, W.B. Saunders Co 1996, p. 394.
2. **Massie BM, Shah NB.** Evolving trends in the epidemiologic factors of heart failure: rationale for preventive strategies and comprehensive disease management. *Amer Heart J* 1997; 133: 703–712.
3. **Hu KKL, Pinsky JL, Kannel WB et al.** The epidemiology of heart failure: the Framingham study. *J Amer Coll Cardiol* 1993; 22 (Suppl A): 6A–13A.
4. **Baraková A et al.** (Projekt MONIKA, Slovensko): Vybrané informácie zo zdravotníckej štatistiky o vývoji ochorení obehovej sústavy v SR. Bratislava, 2000, s. 111.
5. **Gooding J, Jette AM.** Hospital readmissions among the elderly. *J Amer Geriatr Soc* 1985; 33: 595–601.
6. **The Task Force of the European Society of Cardiology.** Guidelines for the diagnosis of heart failure. *Europ Heart J* 1995; 16: 741–751.
7. **The Task Force of the European Society of Cardiology.** Guidelines for the treatment of heart failure. *Europ Heart J* 1997; 18: 736–753.

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