Temporal trends in baseline characteristics and treatment modalities of patients with heart failure at the University Hospital Centre Split – where are we now?

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Introduction: Heart failure (HF) is a complex clinical syndrome associated with high mortality, morbidity, and healthcare expenditures.[1,2] We sought to determine temporal trends concerning baseline characteristics and treatment modalities of patients enrolled at our Center during two periods: 2008-2012 and 2018-2019 for which data were available.

Patients and Methods: Patients admitted with the chief diagnosis of HF were stratified into two groups for the statistical analysis. The historic cohort comprised patients admitted during the period 2008-2012 (N=356) while the contemporary cohort (2018-2019) consisted of 108 patients.

Results: Patients in the contemporary cohort were younger, had a significantly higher prevalence of non-ischemic cardiomyopathy, diabetes mellitus, more preserved renal function, higher hemoglobin, higher uric acid, and lower potassium levels compared to the historic cohort. On the other hand, distribution of sex, blood pressure at admission, the prevalence of atrial fibrillation, NYHA functional class, left ventricular ejection fraction and left end-diastolic diameters were similar in both groups (**Table 1**).

TABLE 1. Baseline characteristics of patients in historic (2008-2012) and contemporary (2018-2019) heart failure cohorts treated at the University Hospital Centre Split.

Variable	Historic cohort (2008-2012) N=356	Contemporary cohort (2018-2019) N=108	p-value
Female sex	51.1%	49.1%	0.709
Age, *years*	74.2 ± 9.9	70.2 ± 10.9	**<0.001***
Ischemic cardiomyopathy	76.4%	49.1%	**<0.001***
Atrial fibrillation	52.0%	54.6%	0.627
Diabetes mellitus	27.5%	44.4%	**<0.001***
NYHA functional class	3.07 ± 0.7	3.06 ± 0.6	0.875
LVEF, %	42.3 ± 9.4	43.8 ± 17.0	0.213
LVEDd, *mm*	64 ± 81	59 ± 10	0.499
Urea, *mmol/L*	9.3 ± 7.7	10.7 ± 5.6	0.084
Creatinine, µmol/L	142 ± 95	117 ± 59	**0.009***
eGFR, *mL/min./1.73 m²*	49 ± 23	58 ± 25	**<0.001***
Uric acid, *mmol/L*	486 ± 172	535 ± 166	**<0.001***
Hemoglobin, *g/L*	126 ± 20	134 ± 20	**<0.001***
Sodium, *mmol/L*	138 ± 4.4	138 ± 3.7	0.762
Potassium, *mmol/L*	4.5 ± 0.8	4.1 ± 0.5	**<0.001***
Systolic blood pressure, *mmHg*	137 ± 28	137 ± 29	0.145
Diastolic blood pressure, *mmHg*	81 ± 15	81 ± 13	0.204

LVEDd-left ventricular end-diastolic diameter; LVEF-left ventricular ejection fraction; NYHA-New York Heart Association; eGFR-estimated glomerular filtration rate

*denotes statistically significant result at p<0.05 level (Chi-square analysis or Student t-test were used for comparisons between two groups)

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As shown in **Figure 1A**, we observed a significant decline in the prevalence of HF with midrange ejection fraction in a contemporary cohort compared to a historic one (p<0.001) along with a significant increase in the prevalence of HF with preserved ejection fraction and HF with reduced ejection fraction (p<0.001). Regarding treatment modalities, acetylsalicylic acid use significantly declined while the use of oral anticoagulants significantly increased among the contemporary cohort compared to the historic one. Likewise, the use of life-prolonging therapy such as beta-blockers increased by about 45%, and ACE-inhibitors or ARBs by about 11% accompanied by the slight decrease in the use of loop diuretics (**Figure 1B**).
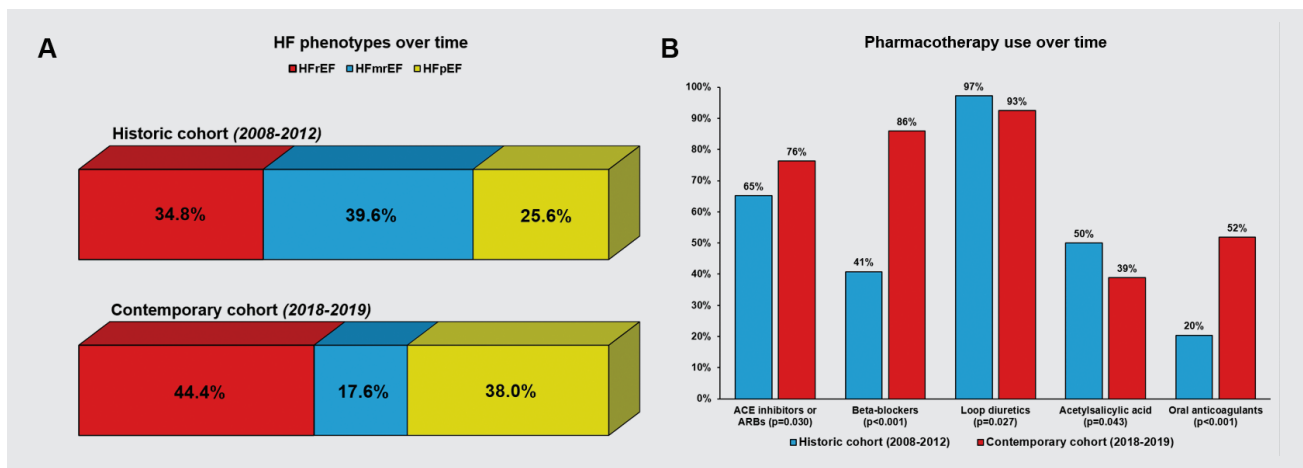

FIGURE 1. A) Change in heart failure clinical phenotypes over time in two compared cohorts; B) Trends in pharmacotherapy use over time in two compared cohorts.
ACE-Angiotensin-converting enzyme; ARB-angiotensin receptor blocker; HFmrEF-heart failure with midrange ejection fraction; HFpEF-heart failure with preserved ejection fraction; HFrEF-heart failure with reduced ejection fraction

Conclusions: After the approximately 10-year timespan, we observed several changes in baseline characteristics of HF patients treated at our center. The most prominent change is the highest relative growth in the prevalence of HF with preserved ejection fraction. Likewise, the proportional use of life-prolonging pharmacotherapies and anticoagulation coverage (nowadays mostly direct oral anticoagulants) significantly improved over time.

LITERATURE ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
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