

Seasonal variation in decompensated heart failure in the emergency unit according to LVEF category – a retrospective analysis

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Background

Observational studies suggest:

Decompensations follow a seasonal trend with increased prevalence in winter and whether this trend differs by aetiology is unknown

Aim of our study:

- > Assessment of seasonality of decompensations in the emergency unit
- Categorization of patients into HFpEF, HFmrEF and HFrEF



Fig. 1: Comparison of numbers of decompensations and temperature profil; Most patients decompensated in January (n=144) and least patients in August (n=65). Maximal daily temperature was stratified by deciles, with significantly more heart failure decompensations on coldest days (1st decile vs. 10th decile: 102 vs 73 decompensations, P=0.025). Thereby, significant inverse association between temperature and prevalence of decompensations in patients with HFpEF (P for linear-by-linear =0.002) and with HFrEF (P for linear-by-linear =0.003).

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(n=290), respectively.

These data reconfirm a prevalence for HFpEF of approximately 50% among patients with decompensated heart failure, and a seasonal trend of heart failure decompensations. The prevalence of cardiac decompensation is indirectly proportional to temperature, regardless of the underlying heart failure aetiology. One may speculate that mechanisms underlying the adverse effect of cold temperature are similar between HFpEF and HFrEF. The fact that decompensations rise in winter months might lead to an adaptation of preventive strategies in patients with chronic heart failure during the cold season.

Fig. 2: Heart Failure Prevalence; Between August 2018 and July 2019, 32028 **patients** presented in the emergency unit, and **1248** fulfilled the criteria of **cardiac** decompensation (3.9%). Among those with available LVEF (n=866, 69%), the prevalence of HFpEF, HFmrEF and HFrEF was 43% (n=376), 23% (n=200) and 34%

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Conclusion

CS	Overall (n = 1248)	HFpEF (n = 376, 43%)	HFmrEF (n = 200, 23%)	HFrEF (n = 290, 34%)
[y])	79,7 ± 9,9	78,6 ± 9,4	79,5 ± 9,6	76,3 ± 9,4
[%])	42,5 ± 14,6	57,1 ± 6,2	43,5 ± 2,8	26,9 ± 7,0
QR	4062 (1758 – 9132)	2982 (1388 - 6702)	4305 (2085 – 8707)	7216 (3502 – 16485)
3m²])	47,9 ± 22,3	49,2 ± 22,8	46,9±18,9	46,7±23,0

Tab. 1: Baseline characteristics; Available LVEF in 866 Patients. Compared with HFrEF, patients with **HFpEF were older** (mean age ± SD 78.6 ± 9.4 vs 76.3 ± 9.4 years, **P<0.001**), more often females (57% vs 25%, P<0.001) and had lower NT-proBNP levels (median 2982 [IQR, 1388 – 6702] pg/ml vs 7216 [3502 – 16485] pg/ml, **P<0.001**).

The authors certify that there is no actual or potential conflict of interest in relation to this article.