

Blood urea nitrogen to creatinine ratio, clinical outcomes, and effect of finerenone in HFmrEF/HFpEF: Findings in FINEARTS-HF

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Background: BUN/Cr in HFmrEF/HFpEF

- The blood urea nitrogen to creatinine ratio (BUN/Cr) is an established prognostic biomarker in chronic heart failure (HF) with reduced ejection fraction.
- BUN/Cr is thought to reflect neurohumoral activity (especially the effects of arginine vasopressin) and renal haemodynamic changes beyond conventional measures of renal function such as estimated glomerular filtration rate (eGFR).
- However, the prognostic relevance of BUN/Cr in patients with HF and mildly reduced or preserved ejection fraction (HFmrEF/HFpEF) is less certain, and its potential interaction with the effects of the nonsteroidal mineralocorticoid receptor antagonist (nsMRA) finerenone is unknown.

Objectives/Methods/Results

Objectives

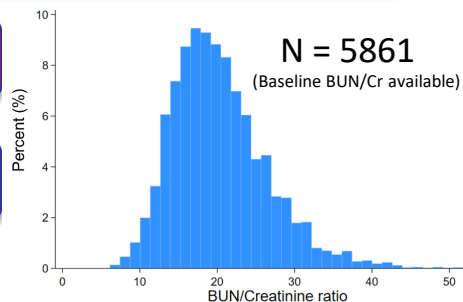
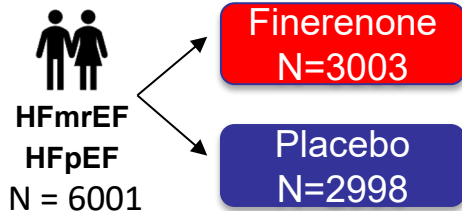
- To evaluate the association between BUN/Cr and clinical outcomes in patients with HFmrEF/HFpEF
- To assess the effects of finerenone on clinical outcomes according to baseline BUN/Cr

Methods

FINEARTS-HF

NYHA II-IV, LVEF \geq 40% + structural heart disease, elevated natriuretic peptides, diuretics in the 30 days prior to randomization

Primary outcome: Total HF events and CV death



Results

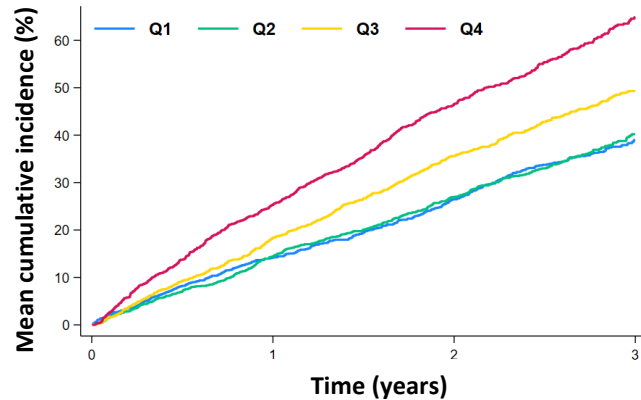
	Q1	Q2	Q3	Q4
BUN/Cr Quartile (Q)	≤ 15.97 (n = 1,466)	15.97- ≤ 19.52 (n = 1,465)	19.52- ≤ 23.75 (n = 1,466)	> 23.7 (n = 1,464)
Age (years)	70	72	72	74
Sex, female (%)	28	39	52	63
NYHA III/IV (%)	28	31	32	32
Body mass index (kg/m ²)	30	30	30	30
LVEF (%)	52	52	53	53
NT-proBNP (pg/mL)	907 (402-1,807)	1,002 (455-1,826)	1,074 (479-1,948)	1,185 (479-2,293)
BUN (mg/dL)	16	20	24	31
Serum creatinine (mg/dL)	1.2	1.1	1.1	1.1
eGFR (mL/min/1.73m ²)	63	62	62	62
Diabetes (%)	39	40	41	43
Myocardial infarction (%)	32	27	24	20
ACE-I/ARB/ARNI (%)	80	80	80	78
Beta-blocker (%)	87	85	86	82
Loop diuretic dose (mg) (furosemide equivalent)	40	40	40	40

Clinical Outcomes According to Baseline BUN/Cr

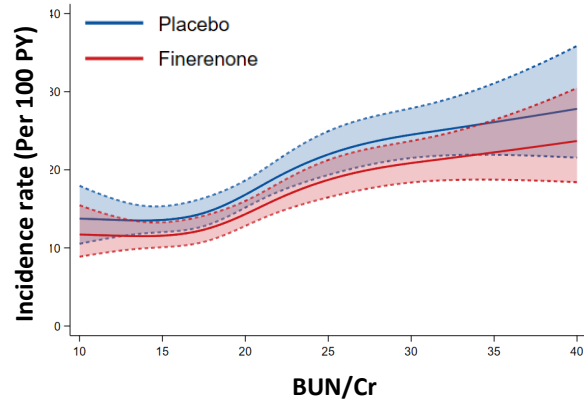
Total HF events and cardiovascular death	Q1: ≤ 15.97 (n = 1,466)	Q2: 15.97- ≤ 19.52 (n = 1,465)	Q3: 19.52- ≤ 23.75 (n = 1,466)	Q4: > 23.7 (n = 1,464)
Total No. of events	474	482	598	754
Event rate (95% CI)	13.1 (11.3-15.3)	13.3 (11.7-15.2)	16.8 (14.7-19.1)	22.1 (19.7-24.8)
Rate ratio (95% CI)*	Reference	1.00 (0.82-1.22)	1.20 (0.98-1.47)	1.46 (1.20-1.79)

*The model was stratified by geographic region and baseline left ventricular ejection fraction (<60%, $\geq 60\%$).

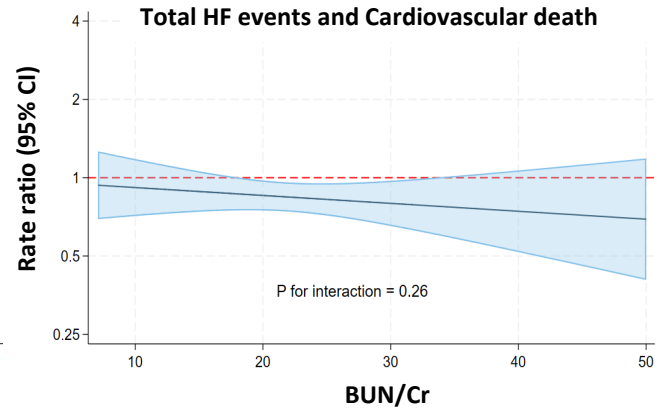
Cumulative incidence



Incidence rate

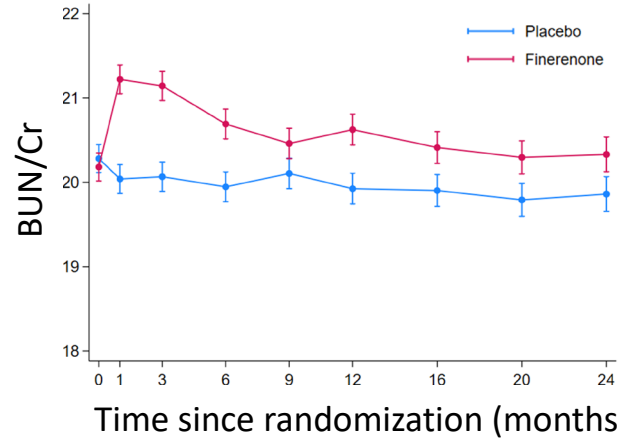


Treatment effect

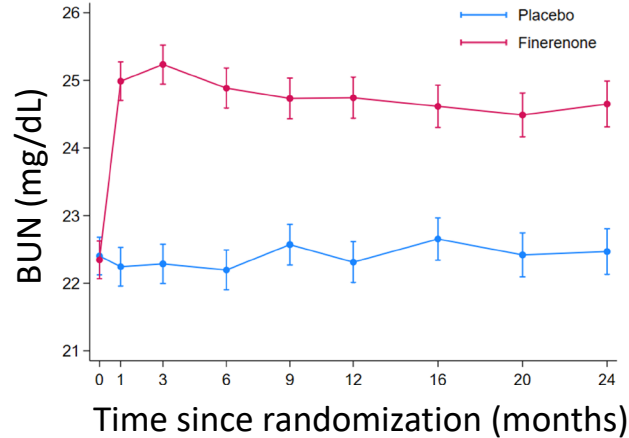


Influence of Finerenone on BUN/Cr During Follow-up

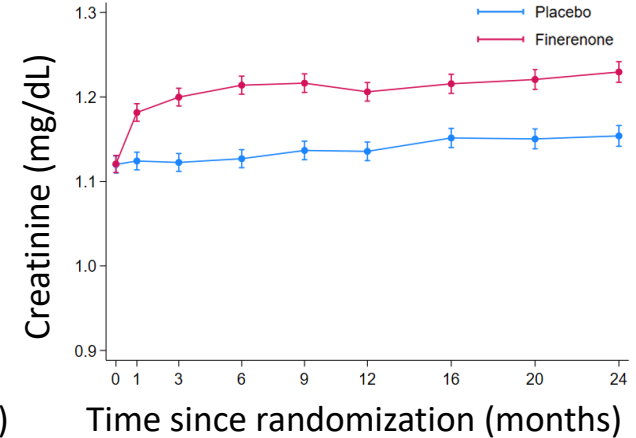
Mean BUN/Cr change



Mean BUN change



Mean serum Cr change



BUN/Cr	Finerenone	Placebo	Difference (Finerenone - Placebo)
Baseline	20.2 (20.0-20.3)	20.3 (20.1-20.4)	-0.1 (-0.2 - 0.1)
1 month	21.2 (21.0-21.4)	20.0 (19.8-20.2)	1.2 (0.9 - 1.4)

BUN	Finerenone	Placebo	Difference (Finerenone - Placebo)
Baseline	22.3 (22.1-22.6)	22.4 (22.1-22.7)	-0.1 (-0.5 - 0.3)
1 month	24.9 (24.6-25.2)	22.1 (21.8-22.4)	2.7 (2.3 - 3.2)

Cr	Finerenone	Placebo	Difference (Finerenone - Placebo)
Baseline	1.12 (1.11-1.13)	1.12 (1.11-1.13)	0.00 (-0.01 - 0.01)
1 month	1.18 (1.17-1.19)	1.12 (1.11-1.13)	0.06 (0.04 - 0.72)

BUN/Cr in FINEARTS-HF: Conclusions

- In a contemporary cohort of patients with HFmrEF/HFpEF, higher BUN/Cr was associated with worse clinical outcomes.
- High BUN/Cr was driven by difference in BUN. Cr (and eGFR) showed little difference across BUN/Cr quartiles.
- Finerenone reduced the primary outcome (total HF events and cardiovascular death) regardless of baseline BUN/Cr.
- Finerenone increased BUN/Cr compared with placebo, due to a greater increase in BUN than in Cr.