

# Changes in Mid-regional pro-atrial natriuretic peptide (MR-proANP) during thirsting separate patients with diabetes insipidus from those with primary polydipsia

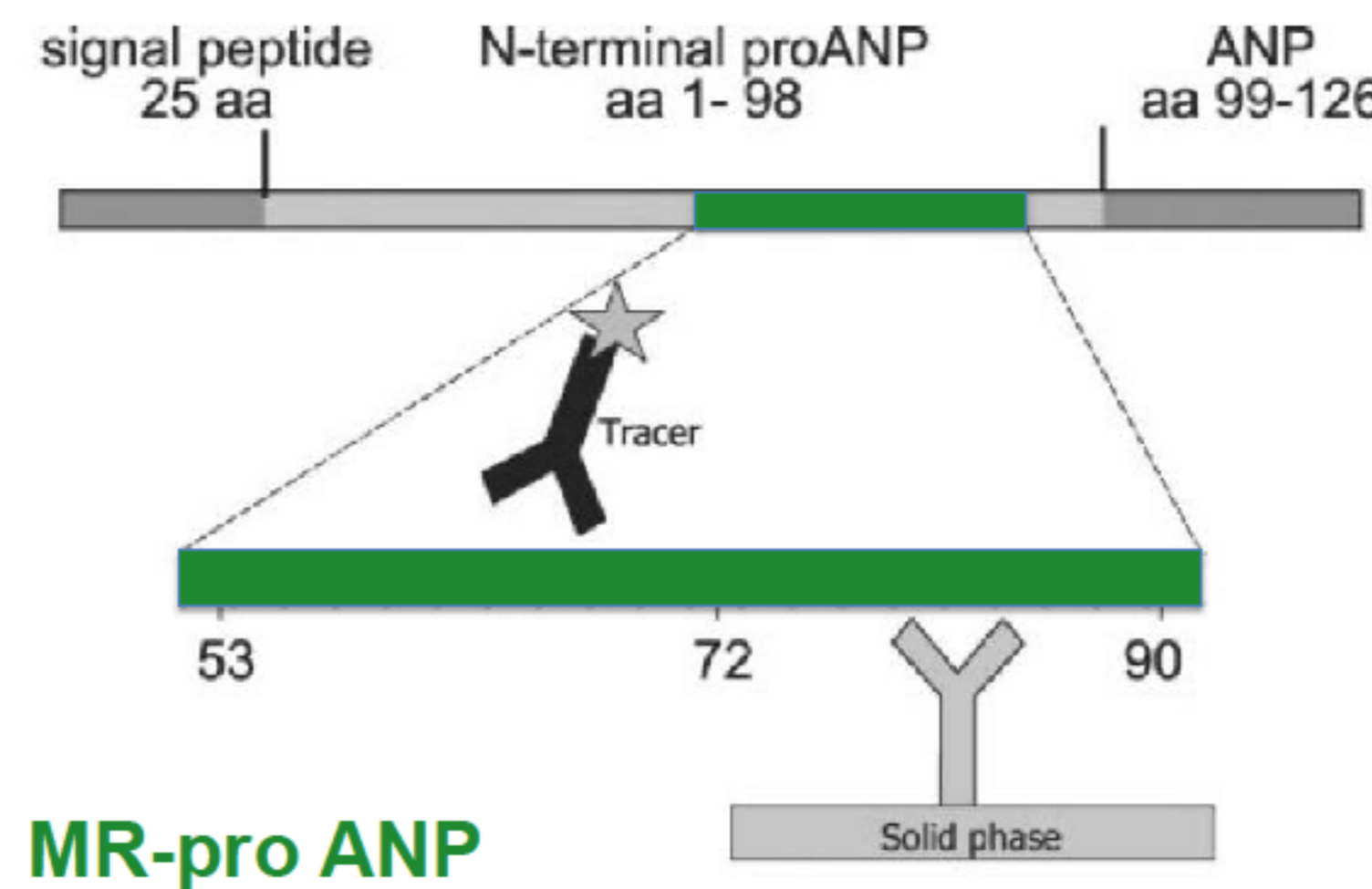
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## Background & Aim

### Background:

The water deprivation test as the accepted gold standard in the differential diagnosis of polyuria polydipsia syndrome can be associated with a decrease in extracellular fluid volume in patients with diabetes insipidus (DI).



### Aim:

To evaluate mid-regional pro-atrial natriuretic peptide (MR-proANP) as marker of extracellular body volume in patients with diabetes insipidus compared to primary polydipsia (PP) at baseline and after water deprivation.

## Methods

### Patients included:

- Age >18 years
- History of polyuria (>40mL/kg/24h) and polydipsia

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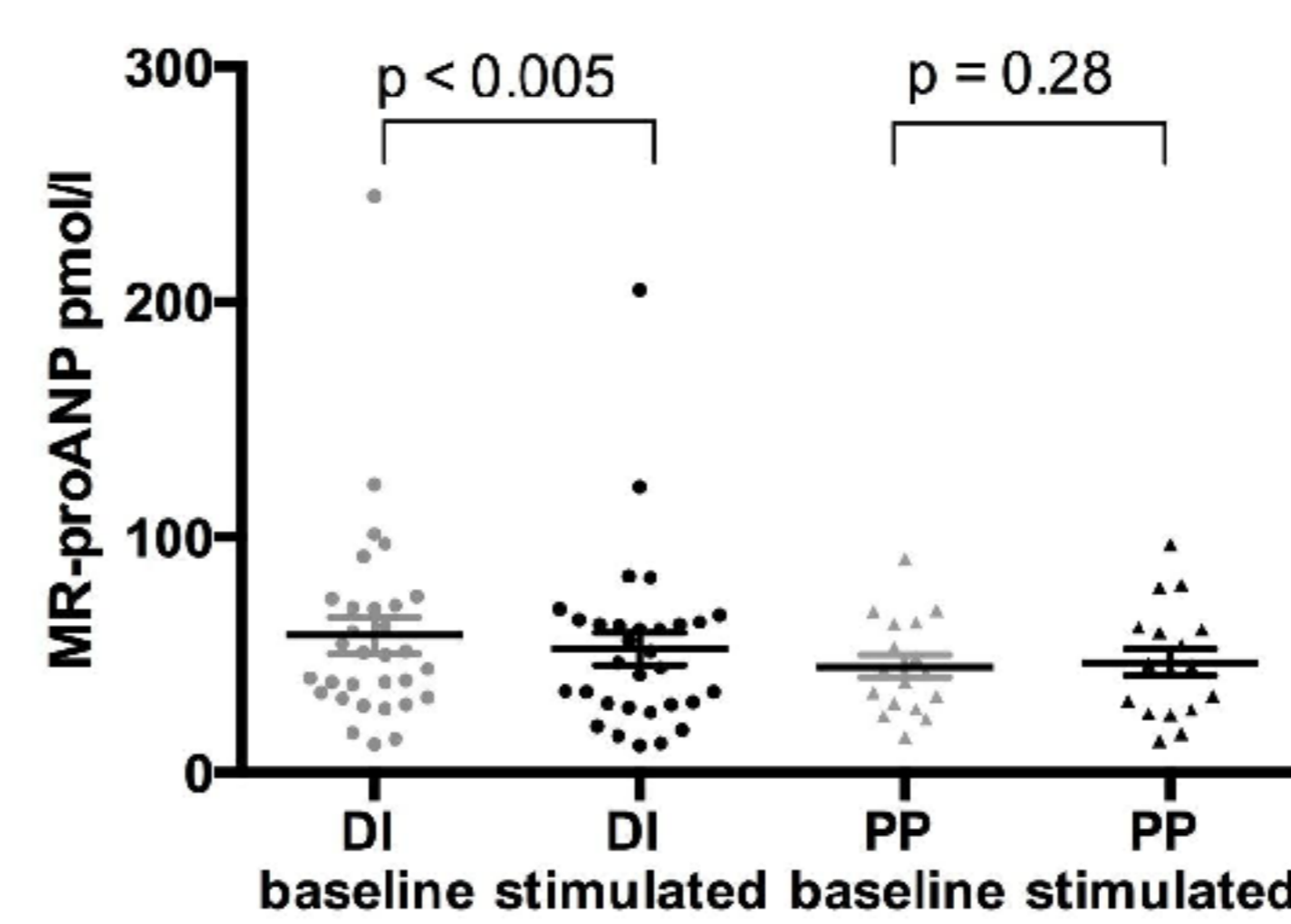
- Participants underwent a standardized combined water deprivation and 3% saline infusion test that was terminated when serum sodium levels exceeded 147mmol/L.
- MR-proANP levels were determined at baseline and when serum sodium exceeded 147mmol/L.

## Results

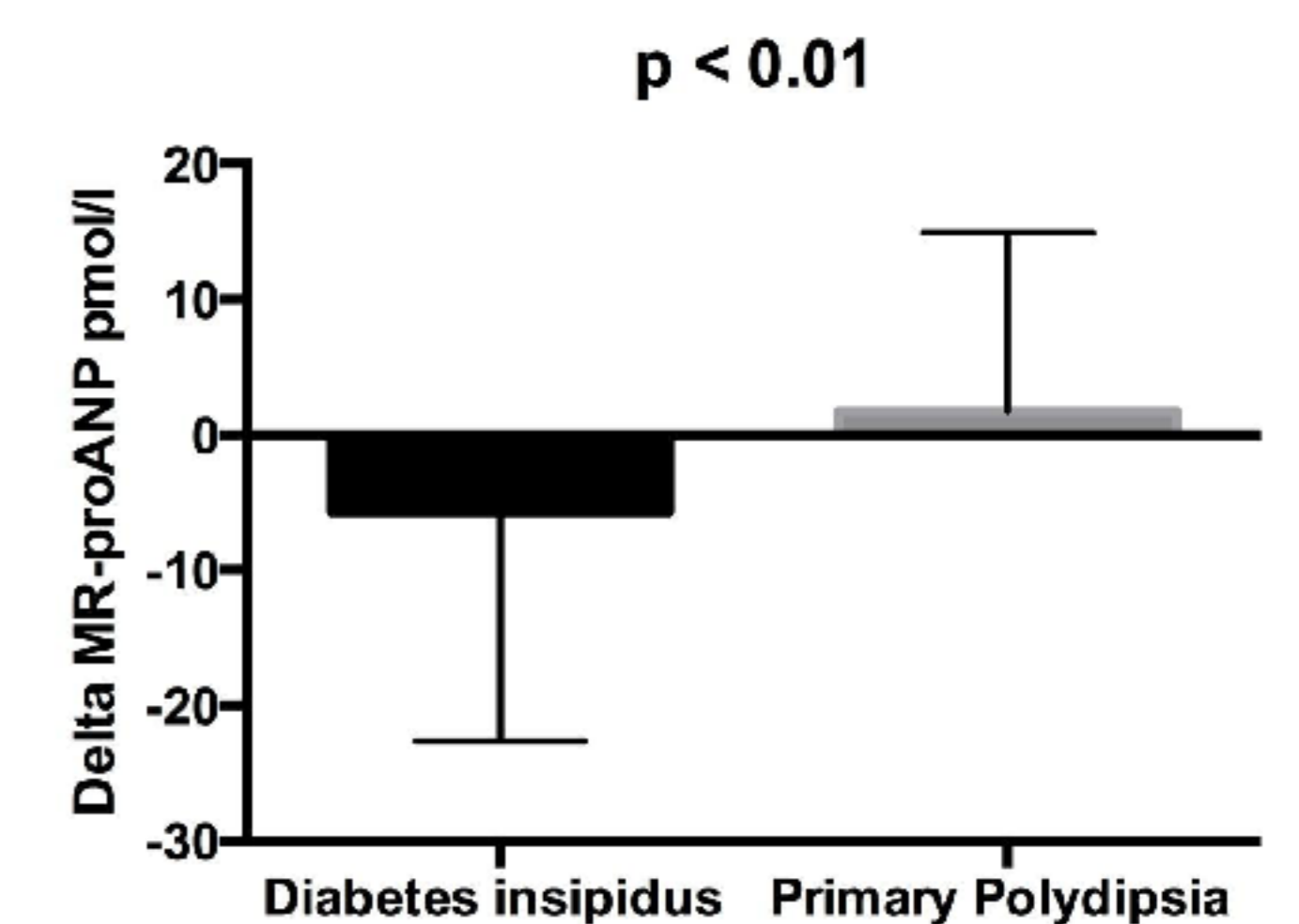
Table 1: Baseline Characteristics

	All Patients (n=48)	Diabetes insipidus (n=31)	Primary Polydipsia (n=17)	p-value
Age (years), median (IQR)	45 (33; 57)	48 (39; 59)	36 (27; 46)	0.06
BMI (kg/m <sup>2</sup> )	25.2 (22.0; 30.5)	24.8 (22.2; 31.8)	25.5 (19.6; 27.5)	0.22
Gender, male/female, (female %)	27 (56.3%)	15 (48.3%)	12 (70.6%)	0.22
Current smoker (yes %)	13 (27.1%)	8 (25.8%)	5 (29.4%)	1.0
History of a brain tumor (yes %)	10 (20.8%)	10 (32.3%)	0 (0%)	1.0
History of transsphenoidal surgery (yes %)	9 (18.8%)	9 (29%)	0 (0%)	0.02
Blood pressure systolic (mmHg)	125 (115; 135)	127 (120; 139)	113 (106; 130)	0.04
Blood pressure diastolic (mmHg)	80 (74; 85)	80 (75; 87)	75 (70; 84)	0.13
Heart rate (/min)	71 (65; 80)	70 (64; 77)	79 (66; 84)	0.11
Body temperature (°C)	36.8 (36.4; 37.4)	36.6 (36.4; 37.0)	37.3 (36.8; 37.7)	0.03
Fluid intake, L/24h	6 (4; 8)	6 (4.5; 8.5)	4.5 (4; 7)	0.27
Clinical volume status: Hypo-/eu-/hypervolaemic (euvolaemic %)	5/34/0 (87.2%)	3/25/0 (89.3%)	2/10/0 (83.3%)	0.63
Hemoglobin (g/l)	139 (133; 147)	138 (134; 148)	142 (134; 144)	0.89
Hematocrit (l/l)	0.41 (0.38; 0.43)	0.41 (0.38; 0.43)	0.41 (0.39; 0.43)	1.0
Creatinine (umol/l)	73 (64; 85)	80 (65; 88)	66 (62; 73)	0.01
Albumine (g/l)	40 (37; 43)	40 (37; 43)	41 (37; 43)	0.85
Diuretics (%)	1 (2.1%)	0 (0%)	1 (5.9%)	0.35
Lithium (%)	5 (10.4%)	4 (12.9%)	1 (5.9%)	0.64
Antiepileptics (%)	4 (8.3%)	2 (6.5%)	2 (11.8%)	0.61
Desmopressin (%)	7 (14.6%)	7 (22.6%)	0 (0%)	0.04

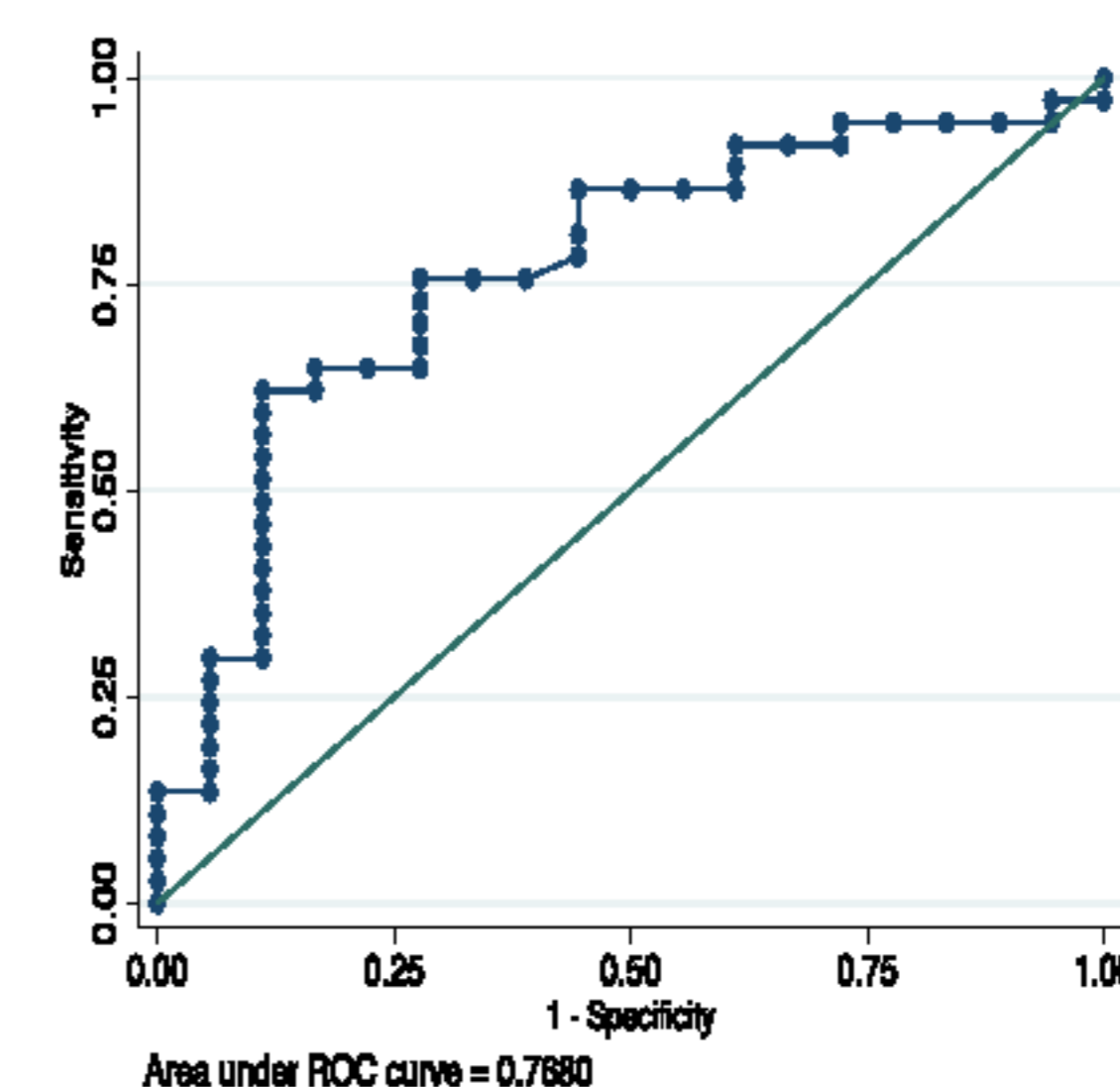
### MR-proANP in Diabetes insipidus and Primary Polydipsia



### Delta-MR-proANP in Diabetes insipidus and Primary Polydipsia



### ROC curve of Delta-MR-proANP to differentiate Diabetes insipidus from Primary Polydipsia



## Summary & Conclusion

- MR-proANP levels decrease upon a water deprivation test in patients with DI, without a change in PP.
- MR-proANP levels mirror the subtle volume loss in patients with DI undergoing a water deprivation test.
- Delta-MR-proANP was able to predict diagnosis of DI in a water deprivation test by reflecting change in volume status.
- Therefore, Delta-MR-proANP, in combination with other markers (e.g. copeptin, vasopressin) should be further evaluated as promising laboratory parameter in the diagnosis and differential diagnosis of polyuria polydipsia syndrome.