Correlation between B-type natriuretic peptide with hyponatraemia and delayed ischaemic neurological deficit after subarachnoid haemorrhage

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Background

- Serum brain natruiretic peptide (NTproBNP) is elevated after subarachnoid haemorrhage (SAH).
- This could be related to Hyponatraemia, or delayed ischaemic neurological deficit, or both.
- Two possible mechanisms: Cerebral salt wasting (CSW) or syndrome of inappropriate ADH secretion (SIADH)

Aim of the study

- Is there a correlation between NTproBNP and hyponatraemia and DIND after SAH?

Materials and Methods

- A prospective study.
- 30 adult patients presenting with aneurysmal SAH.
- Admitted to neurosurgical intensive care.
- Alexandria university hospitals.
- NTproBNP and serum sodium (Na) levels were measured over 14 days post SAH onset.
- The 14 days were subdivided into 4 observational periods.
- DIND was plotted against both NTproBNP and Na.

Results

- NTproBNP dropped from the first observational period until the fourth.
- Na showed no significant difference among the 4 observational periods.
- In the second observational period, 10 patients (34.5%) developed a more marked hyponatraemia than other periods.
- A significant correlation between Na and NTproBNP observed only in the 4th period. (r=0.43, p=0.03).
- DIND occurrence was 40%.
- Na levels among DIND cases was lower and significantly different than that for those without DIND. (Z=-3.28, p=0.001)
- NTproBNP levels showed no significant difference between DIND cases and those without DIND. (Z=-1.61_, p=0.11)

Distribution of SAH Cases according to Serum sodium level (mmol/L) and DIND status

Distribution of SAH Cases according to Serum NT-proBNP level (pg/ml) and DIND status

Conclusions

- A positive correlation between Na and DIND was found.
- No significant correlation between NTproBNP and DIND

Future work

- Daily BNP follow up rather than 4 points check during a 14 days period.
- More work into other possible predictors for DIND like atrial natriuretic peptide.

Distribution of SAH cases according to DIND status