

HOW FREQUENTLY CAN WE PREDICT FAILURE OF FLUID RESTRICTION IN SIAD? RESULTS OF A MULTICENTER PROSPECTIVE AUDIT

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Introduction

The commonest cause of hyponatraemia in clinical practice is the Syndrome of Inappropriate Antidiuresis(SIAD). Clinical guidelines from the USA and Europe are consistent in their recommendation that fluid restriction should be first line therapy if hyponatraemia in SIAD requires intervention^{1,2}. However, the evidence base for the use of fluid restriction is very limited¹, with no randomized controlled trials in SIAD to support the recommendations. In addition, fluid restriction is difficult to implement, particularly if patients require intravenous antibiotics or nutritional supplementation, and many patients are unable to tolerate the degree of restriction of fluid intake that is necessary to elevate plasma sodium concentration.

The US guidelines included useful predictors of non-response to fluid restriction, including urine osmolality > 500 mOsm/kg, urine output < 1500ml/24h and Furst equation ratio(urine sodium+potassium/plasma sodium) > 1.

Objective

We set out to determine how many patients had pre-treatment criteria which would predict failure of fluid restriction in a non-selected population of patients with well-defined SIAD.

Conclusions

Our data demonstrate that a significant proportion of a well-defined, prospective and consecutive cohort of SIAD patients had clinical parameters that the US guidelines would suggest could predict failure of response to fluid restriction.

59% of patients had one criterion and 37% of patients had two predictors.

The sensitivity and specificity of the predictors of failure remain unpublished. However, if the predictors are accepted as correct, our data suggest that up to 60% of patients with SIAD could be predicted to be non-responders to fluid restriction, the universally-recommended first line therapy for SIAD. This would suggest that a trial testing the validity of the predictors of failure would provide important information; if the predictors of failure of response to fluid restrictors are shown to be accurate, the role of fluid restriction as first line therapy for SIAD should be re-assessed, if over 50% of patients can be predicted to fail to respond to therapy.

Material and methods

183 patients were consecutively recruited in Hospital Clínico San Carlos, Madrid (n= 51) and Beaumont Hospital, Dublin (n =132) with a diagnosis of SIAD. Full ascertainment of the diagnostic criteria for SIAD was obtained with 100% of patients having appropriate results for urine osmolality and urine sodium concentration, normal thyroid function and 0900h cortisol > 300 nmol/l(>10.9 mcg/dl).

Basic clinical data to predict failure to respond to fluid restriction was obtained but clinical decisions were left to admitting physicians.

Results

Median age was 75 years (IQR 64,82), 109(59%) were female.

The most common causes of SIAD were central nervous disorders (n = 38, 20.9%), pulmonary diseases (n=36, 19.8%), malignancy (n=36,19.8%) and drugs (n =16, 8.8%).

PREDICTOR OF FAILURE OF FLUID RESTRICTION	N	%
Urine volume < 1500 ml/24h	49/103	47
Urine osmolality > 500 mOsm/kg	75/183	41
Furst equation ratio > 1	48/183	26
Presence of one predictor	109/183	59
Presence of two predictors	69/183	37
Presence of three predictors	6/183	3

Table 1. Number and percentage of patients with SIAD who had pre-treatment criteria which would predict failure of fluid restriction.

References

1. Verbalis JG, Goldsmith SR, Greenberg A, et al. Diagnosis, evaluation, and treatment of hyponatremia: expert panel recommendations. *Am J Med.* 2013; 126: 1-42.
2. Spasovski G, Vanholder R, Allolio B, et al. Clinical practice guideline on diagnosis and treatment of hyponatraemia. *Eur J Endocrinol.* 2014; 170: 1-47

