

An audit of hyponatraemia in a large UK university teaching hospital



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Background/ Introduction

Hyponatraemia is the most commonly observed electrolyte abnormality in hospitalised patients. The many causes of hyponatraemia may be classified either by volume status or aetiology.

Thorough history taking, clinical examination and investigation are necessary in order to accurately determine the cause of hyponatraemia and so formulate the most appropriate management plan.

Methods

Patients with serum sodium <131mM were identified by daily automated search of the biochemistry database at Nottingham University Hospitals NHS Trust over a two week period (September 2012).

Data regarding clinical history, examination of volume status, investigations undertaken, diagnosed aetiology of hyponatraemia, length of hospital stay and treatment were extracted retrospectively from the medical notes using a linked anonymised system. Data analysis was performed using Microsoft Excel® 2010 and results are given as mean +/- standard deviation.

Results

75 patients were identified. Mean age was 76.0 (+/- 13.0) and 53% were female. Mean serum sodium was 126.5 mM (+/- 4.1), potassium 4.4 mM (+/- 1.0), creatinine 116.8 µM (+/-133), plasma osmolality 270.1 osmol/Kg (+/- 22.4). Mean urinary osmolality was 362 +/- osmol/Kg (+/- 141.7) and spot urinary sodium of 38.1 mM (+/- 40.2).

The average length of stay was 18.2 days (+/- 26.1). 43% had recorded an examination of volume status.

The aetiology of hyponatraemia was established in 37.3% of patients. 11 patients were recorded as having SIADH but in only two of these were investigations sufficient to substantiate this conclusion.

The most common aetiological association was malignancy (21%), heart failure (17%), thiazides (16%) and Selective Serotonin Reuptake Inhibitors (SSRIs) (7%).

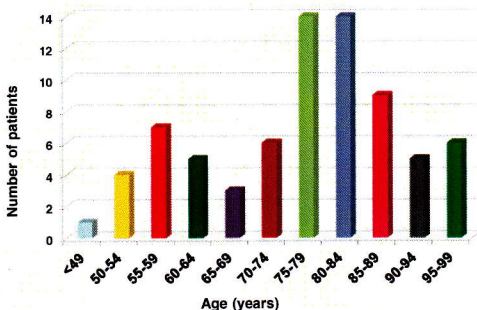


Figure 1: Age of the 75 patients identified with hyponatraemia

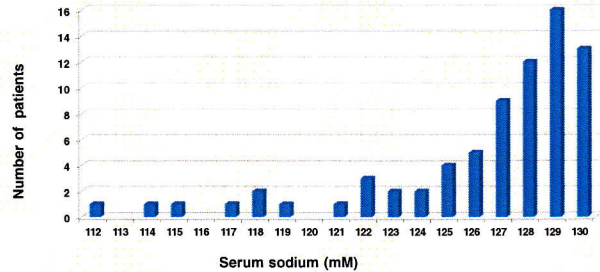


Figure 2: Lowest serum sodium concentration of the 75 patients with hyponatraemia

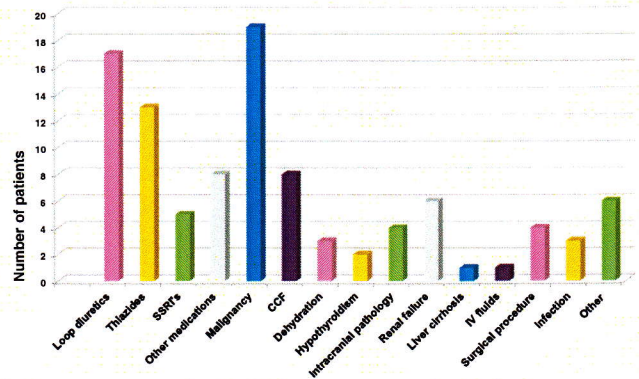


Figure 3: Cause of hyponatraemia stated in the medical notes for the 75 patients. CCF, Congestive Cardiac Failure.

Assessment	Percentage
Fluid status documented	43%
Serum osmolality	24%
Urine osmolality	20%
Urinary sodium concentration	16%
Serum glucose	19%
Thyroid Stimulating Hormone	31%

Table 2: Extent of investigation in patients with hyponatraemia to determine aetiology

Conclusion

Hyponatraemia was usually an isolated electrolyte abnormality with normal serum potassium and mild renal impairment and affected a predominantly elderly population necessitating a hospital stay in excess of two and a half weeks. There was room for improvement in clinical and laboratory investigation. The high prevalence of malignancy was notable and diagnosis of SIADH was particularly poorly substantiated.

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