

Medication induced hyponatraemia

Hyponatraemia (plasma sodium <135mmol/L) is common in hospitalised patients, the incidence is 12% in medical wards and up to 30% in intensive care. Hyponatraemia is associated with an increased length of stay in hospital and increased mortality. Mild hyponatraemia is often asymptomatic with symptoms more likely at lower sodium concentrations. Symptoms of hyponatraemia include lethargy, fatigue, light headedness, confusion and in rare cases seizures.

This bulletin reviews the common causes of hyponatraemia in hospitalised patients based on a recent audit of patients with severe hyponatraemia (sodium \leq 125mmol) admitted to Christchurch hospital from 1st June to 31st December, 2013. In this audit 378 hospitalised patients had severe hyponatraemia, 298 due to medical conditions, 30 due to medications alone and 50 due to a combination of both.

Results

Conditions causing hyponatraemia

Medical causes	Number of patients
Dehydration	137 (44%)
Respiratory infections	63 (21%)
Heart failure	56 (19%)
Malignancy	46 (15%)
CNS causes	29 (10%)
SIADH	25 (8%)
Diabetes	8 (3%)
Alcohol	12 (4%)
Liver disease	9 (3%)
Polydipsia	4 (1%)
Total	298

Hyponatraemia

Hyponatraemia is caused by salt and water loss, (i.e. a dehydration or salt wasting) with salt loss in excess of water; by water retention, e.g. Syndrome of Inappropriate Antidiuretic Hormone secretion (SIADH); or increased concentration of other osmotically active substances, e.g. glucose or lipids. In evaluating hyponatraemia, the volume status of the patient is critical. The medical and medicines history may provide clues as to the likely cause.

Medication induced hyponatraemia

Medications are a common cause of hyponatraemia. In this audit, 80 out of 278 patients (29%) had medication induced severe hyponatraemia. Drugs can induce hyponatraemia by either causing SIADH or by salt and water depletion.

Medications commonly causing hyponatraemia

DRUGS	NUMBER OF PATIENTS
THIAZIDES	37 (46%)
OTHER DIURETICS	8 (10%)
PROTON PUMP INHIBITORS	9 (11%)
SSRIs/SNRIS	8 (10%)
ANTICONSULSANTS	6 (8%)
OPIOIDS	4 (5%)
DESMOPRESSIN	4 (5%)
OTHERS	6 (8%)
TOTAL	80

Medications can induce hyponatraemia by either causing SIADH or salt and water loss. Medication induced hyponatraemia is most common in the first month of treatment but can occur at any time after the introduction of the culprit drug. Medication induced hyponatraemia resolves rapidly on discontinuation of the medication.

Thiazides

Thiazides are a commonly prescribed effective treatment for hypertension, they are cheap, relatively safe and have been used since the 1950s. The mode of thiazide induced hyponatraemia is a combination sodium loss via the sodium-chloride cotransporter at the distal convoluted tubules and reduced free water clearance. The mechanism of thiazide induced hyponatraemia and reasons for individual sensitivity are not known.

Other drugs

Proton pump inhibitors are a very commonly prescribed medication prescribed to 44% of patients in this audit and causing 9 cases of severe hyponatraemia. Similarly selective serotonin reuptake inhibitors (SSRIs) and serotonin and noradrenaline reuptake inhibitors (SNRIs) were prescribed to 16% of patients in this audit and caused 8 cases of severe hyponatraemia. Of the anticonvulsants, carbamazepine was the most common drug causing hyponatraemia. There were also four patients who had severe hyponatraemia induced by desmopressin, given for bladder incontinence.

Summary

The incidence of medication induced severe hyponatraemia at CDHB in this audit was 11 cases per month, half of which is due to thiazide diuretics. Most mild hyponatraemia is asymptomatic and it is not a usual practice to routinely check for hyponatraemia after the introduction of a new medication. The incidence and severity of events suggest that monitoring electrolytes for 4 weeks after the introduction of thiazide diuretics. Medications are an important differential diagnosis to consider in all cases of hyponatraemia.