CREST

CLINICAL RESOURCE EFFICIENCY SUPPORT TEAM

HYPONATRAEMIA - A disorder of water balance which is potentially fatal

INTRODUCTION

Hyponatraemia is a disorder of sodium and water metabolism and is the most common electrolyte abnormality in hospitalised patients.

Hyponatraemia is defined as a Serum Sodium Concentration below 135mmol/l. Water balance is regulated by Antidiuretic Hormone, Renal Medullary Concentrating Ability and Thirst.

Hyponatraemia usually results from retention of water secondary to impairment in free water excretion.

Hyponatraemia can cause morbidity and mortality and incorrect treatment can add to the problem.

PATIENTS AT GREATER RISK

- Women
- Postoperative patients
- Psychiatric polydipsic patients
- Children
- Alcoholics
- Malnourished patients
- Burns patients

The risk of Hyponatraemia among elderly people is compounded by chronic disease and the concurrent use of long-term medications. Recent attention has focused on Thiazide diuretics and the new antidepressants SSRIs, but many other drugs have been implicated.

SIGNS AND SYMPTOMS

Signs and symptoms of Hyponatraemia are primarily related to the central nervous system. Cerebral oedema can occur and early manifestations of Hyponatraemia include; anorexia, nausea, lethargy and apathy.
More advanced signs and symptoms include; disorientation, agitation, seizures, depressed reflexes, focal neurological deficits, Cheyne-Stokes respiration and coma.
Clinical manifestations of Hyponatraemia correlate with the Serum Sodium Concentration and more importantly with **how rapidly the condition develops.**
Symptoms depend critically on rapidity of onset and the severity of Hyponatraemia.
Acute symptomatic Hyponatraemia can cause cerebral oedema and usually requires rapid correction.
Chronic Hyponatraemia, if corrected too quickly may cause osmotic demyelination!

DIAGNOSIS

Diagnosis involves careful history taking and a comprehensive clinical and physical examination. Obtaining laboratory values of: Serum osmolality; Urine osmolality; Urine sodium.

Check blood pressure; pulse; weigh patient if possible; commence patient on C.N.S. observations. Commence strict fluid balance chart.

This information is used to determine the cause of Hyponatraemia and to help guide therapy.

TREATMENT

TREATMENT OF HYPONATRAEMIA VARIES AND DEPENDS ON WHETHER THE PATIENT IS SYMPTOMATIC OR ASYMPTOMATIC.

MONITOR

During treatment monitor:
Clinical state
C.N.S. observations
Fluid balance (this should be reviewed regularly by an experienced member of medical staff)
Regular U+E; in general the Serum Sodium Concentration should be reassessed every two to four hours during active treatment.

When treating Hyponatraemia always seek advice from a more experienced member of Medical staff.

Guidance is also available on the CREST website: www.crestni.org.uk and the DHSSPS website: www.dhsspsni.gov.uk

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HYPONATRAEMIA - A DISORDER OF WATER BALANCE WHICH IS POTENTIALLY FATAL

STEP 1 EVALUATE

1. Assess patient for signs & symptoms of hyponatraemia - record level of consciousness
2. Monitor closely
3. Is patient on drugs which might lead to hyponatraemia, eg diuretic, antidepressant especially SSRI, SNRI
4. Check fluid balance especially post operative patients

→ **Check Serum Osmolality**

Normal / High (275-290 mOsm/ kg of water)

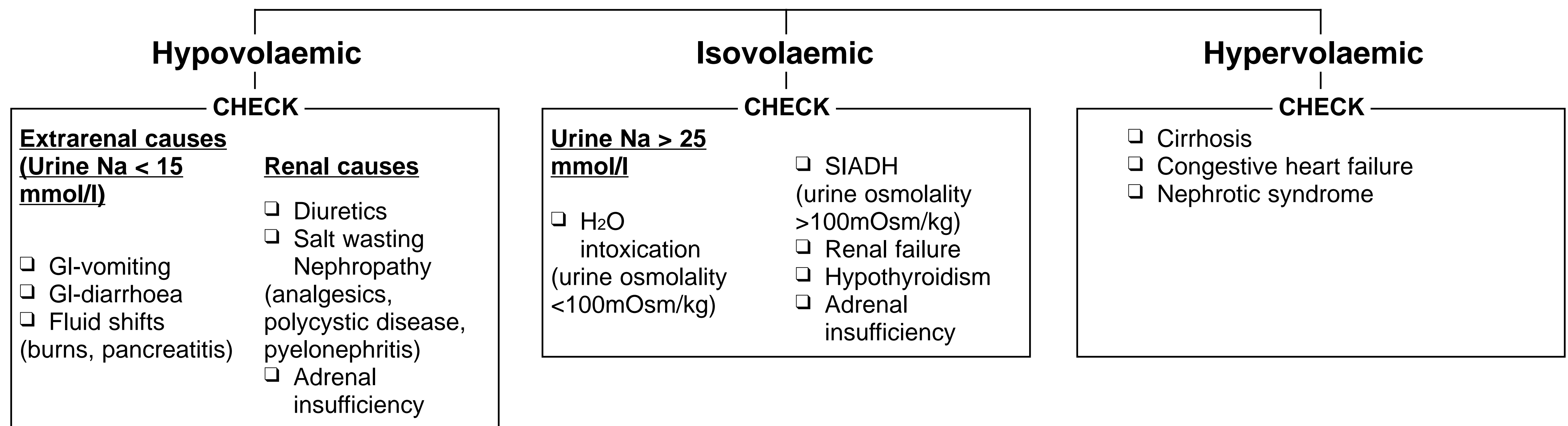
Exclude
- ❑ Hyperglycaemia
- ❑ Hypertonic infusions (glycerol/glycine/mannitol)
- ❑ Hyperlipidaemia
- ❑ Hyperproteinaemia

Low (<275 mOsm/kg of water)

STEP 2 ASSESS VOLUME STATUS

→ **Check (BP, pulse, orthostatic changes, JVP, oedema, ascites)**

AT ALL STAGES ASK FOR HELP IF UNCERTAIN



STEP 3 TREAT

Hypovolaemic - TREATMENT

Symptomatic
Restore volume with fluid challenge (1 litre Saline) over 2-4hrs
Repeat Na in 1hr and continue fluids if Na rising

Asymptomatic
Restore volume with Isotonic Saline

Isovolaemic - TREATMENT

Symptomatic
Hypertonic saline
Frusemide diuresis

Asymptomatic
Water restriction

Hypervolaemic - TREATMENT

Symptomatic / Asymptomatic
Treat underlying disorder
Water restriction

Na+ should not increase by > 12mmol in 24 hours

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