DIABETES INSIPIDUS FACTSHEET

The condition “diabetes insipidus” (DI) is characterised by the passage of large volumes of urine (>3 litres/24hrs), and persistent thirst. It is distinguished from diabetes mellitus (sugar diabetes) by “insipid” urine, i.e., lacking taste, in contrast to the “sweet tasting” urine of diabetes mellitus. A common cause of DI is inadequate secretion of vasopressin, the antidiuretic hormone, from the posterior pituitary. However, some patients suffer from renal conditions in which the kidneys fail to respond correctly to vasopressin; this is nephrogenic DI.

Trauma, infection, granulomatous disease (e.g., sarcoidosis) or tumours in the region of the hypothalamus or pituitary may reduce vasopressin secretion. Pituitary surgery not infrequently causes DI which is usually transitory lasting a few hours or days; occasionally it may be permanent and be accompanied by loss of other pituitary hormones. Pituitary surgery also causes other forms of hypopituitarism which are covered elsewhere (factsheet 6).

PRESENTING SYMPTOMS

- Polyuria, in excess of 3 litres/24hrs in adults
- Thirst and polydipsia (excessive drinking)
- Tiredness, lethargy and reduced concentration (often the result of lack of sleep due to night-time visits to the toilet)

INVESTIGATION

The diagnosis is suggested by copious volumes of dilute urine with normal or slightly raised serum sodium. A water-deprivation test for up to 8 hours with measurements of serum sodium, blood and urine osmolalities and urine volume at 2 hour intervals followed by observation of urinary responses to desmopressin (DDAVP - an artificial vasopressin), can differentiate DI from other causes of polyuria (i.e., persistent excessive drinking or nephrogenic DI). An MRI scan of the pituitary region to include the hypothalamus and posterior pituitary is necessary.

TREATMENT

Mild cases of DI (urine output 3-4 litres/24 hrs) can be managed by ingestion of water to quench thirst. Others require desmopressin (DDAVP) which can be given orally, intranasally or parenterally. It is essential to avoid chronic overdosage which will cause hyponatraemia (low serum concentration of sodium).
LONG-TERM MANAGEMENT

Because of the risk of hyponatraemia, occasional (1-3 monthly) measurements of serum sodium are advised. Some recommend missing desmopressin treatment one day each week to avoid the development of hyponatraemia.

QUESTIONS PATIENTS MAY ASK

- Why am I so thirsty?
  Lack of the normal vasopressin secretion means that the kidneys are unable to concentrate the urine. This results in a high sodium level in the blood which stimulates thirst.

- Why do I have to visit the toilet so often?
  Lack of vasopressin reduces the kidney’s ability to concentrate the urine resulting in the production of large volumes of urine.

- Why do I have headaches?
  This can happen after your DI is treated and it is important to balance the dose of desmopressin and the amount of fluid you drink so as not to retain too much water and develop hyponatraemia (low sodium).

- Will I recover from DI?
  DI can be caused by surgical trauma or accident and may in some cases be transitory, but patients may require treatment for life.

- Is it harmful to miss a dose of DDAVP?
  Generally speaking it is safer to miss a dose of DDAVP than to take an extra dose. You will simply notice that your thirst will be greater than normal, and you should drink more.

RESOURCES

- The Pituitary Foundation HelpLine 0845 450 0375
- Website www.pituitary.org.uk
- Endocrine Nurse HelpLine 0845 450 0377
- Patient Information Booklet - Diabetes Insipidus