

Diabetes Insipidus Causes, Symptoms, Diagnosis, Complications, Treatment And Prognosis

Diabetes insipidus is a condition that manifests itself by increasing sensation of urination, fluid consumption and extreme thirst. Because urine does not have time to accumulate, to concentrate and get yellow, urine color is pale in diabetes insipidus, colorless and with a low concentration. The disease may occur acutely, eg, after head trauma or surgical procedures near the pituitary region, or may be chronic and insidious in onset. It is due to insufficiency of the posterior pituitary or impaired function of the supraoptic pathways that regulate water metabolism. Partial forms of the disease exist. More rarely, it is due to unresponsiveness of the kidney to vasopressin (nephrogenic

Diabetes Insipidus Causes

Central Diabetes Insipidus (due to deficiency of vasopressin)

- Primary diabetes insipidus, due to a defect inherent in the gland itself (no organic lesion), may be familial, occurring as a dominant trait; or, more commonly, sporadic or idiopathic.
- Secondary diabetes insipidus is due to destruction of the functional unit by trauma, infection (eg, encephalitis, [tuberculosis](#), [syphilis](#)), [breast cancer](#) or [lung cancer](#) (common), vascular accidents (rare), and xanthomatosis (eosinophilic granuloma or Hand-Schuller-Christian disease)

Nephrogenic Diabetes Insipidus

This disorder is due to a defect in the kidney tubules that interferes with water reabsorption and occurs as an X-linked recessive trait. Patients with this type of the disease are the so-called water babies. In adults it may be associated with [hyperuricemia](#). At times this type is acquired, eg, after pyelonephritis, potassium depletion, or amyloidosis. Certain drugs (eg, demeclocycline, lithium) may induce nephrogenic diabetes insipidus. The disease is unresponsive to vasopressin.

Diabetes Insipidus Symptoms

The outstanding signs and symptoms of the disease are intense thirst, especially with a craving for ice water, and polyuria (large volumes of urine), the volume of ingested fluid varying from 4 to 20 L daily, with correspondingly large urine volumes. Restriction of fluids causes marked [weight loss](#), dehydration, [headache](#), irritability, fatigue, muscular pains, hypothermia, tachycardia, and shock.

Diabetes Insipidus Diagnosis

Polyuria of over 6 L daily with a specific gravity below 1.006 is highly suggestive of diabetes insipidus. Simple water deprivation with measurement of urine osmolality may be diagnostic. Special tests have been devised to distinguish true diabetes insipidus from psychogenic polydipsia. The latter will often respond (with reduction in urine flow and increase in urinary specific gravity) to administration of hypertonic (3%) saline solution; true diabetes insipidus does not. Hypertonic saline infusion may be dangerous to patients with abnormal cardiovascular status. Although a positive response tends to rule out true diabetes insipidus, a negative must be followed by careful prolonged dehydration and measurement of both urine and plasma osmolality and body weight under hospital conditions, plasma osmolality is normally maintained in the range of 285- 290 mosm/kg.

Impaired ability to either synthesize or release ADH results in diminished ability of the kidney to conserve water. Patients with severe diabetes insipidus minimally concentrate urine following dehydration. After administration of 5 units of vasopressin, urine osmolality promptly rises. The high levels of plasma vasopressin in nephrogenic diabetes insipidus are diagnostic.

Diabetes Insipidus Differential Diagnosis

The most important differentiation is from the “psychogenic” water-drinking habit. This may be difficult, since patients with long-standing polydipsia develop a true defect in renal concentrating ability. The baseline serum osmolality is helpful, since subjects with psychogenic polydipsia have low values, whereas the serum osmolality is normal or high in patients with diabetes insipidus. Polydipsia and polyuria may also be seen in diabetes mellitus, chronic nephritis, hypokalemia (eg, in primary hyperaldosteronism), and in hypercalcemic states such as hyperparathyroidism. The low fixed specific gravity of the

urine in chronic nephritis does not rise after administration of vasopressin. On the other hand, in spite of the inability of patients with diabetes insipidus to concentrate urine, other tests of renal function yield essentially normal results.

Diabetes Insipidus Complications

If water is not readily available, the excessive output of urine will lead to severe dehydration, which rarely proceeds to a state of shock. Insomnia and dysphagia may occur. All the complications of the primary disease may eventually become evident.

Diabetes Insipidus Treatment

Diabetes insipidus treatment depends on the type and severity of patient illness. The treatment options for the main forms of diabetes insipidus are listed below

Central origin diabetes insipidus. Because this form of diabetes is caused by lack of antidiuretic hormone, treatment usually consists of a synthetic hormone called desmopressin administration. It can be administered as a nasal spray, oral tablets or by injection. Synthetic hormones will balance the amount of urine. For most patients with diabetes insipidus of central causes, desmopressin is a safe and effective treatment. If the diabetes insipidus is caused by a disorder of the pituitary gland or hypothalamus (such as a tumor), the anomaly must be treated first. In central type diabetes insipidus, replacing lost fluids is essential. During desmopressin administration the patient should drink water or other liquids only when thirsty because the drug prevents excess water excretion, kidneys excreting less urine and are less responsive to changes in the amount of body fluids. In mild cases of diabetes insipidus of central causes, increased water intake may be the only remedy required. A certain amount of water intake - usually less than 2.5 liters per day – to ensure proper hydration.

Nephrogenic diabetes insipidus. This is the result of kidney disease and does not respond adequately to ADH, so desmopressin is not a treatment option. Instead a diet low in salt to help reduce the amount of urine the kidney produce is recommended. Also the patient must drink enough water to avoid dehydration. The drug hydrochlorothiazide, used alone or in drug combinations, can relieve symptoms. Although hydrochlorothiazide is a diuretic (usually used to increase the amount of urine excreted), in some cases it can reduce excretion in patients with nephrogenic diabetes insipidus. If symptoms of nephrogenic diabetes insipidus are caused by certain drug, it is recommended that administration to be stopped.

Diabetes Insipidus Prognosis

Diabetes insipidus may be latent, especially if there is associated lack of anterior pituitary function; and may be transient, eg, following head trauma. The ultimate prognosis is essentially that of the underlying disorder. Since many cases are associated with organic brain disease, the prognosis is often poor. Surgical correction of the primary brain lesion rarely alters the diabetes insipidus.

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