Sudden Death Due to Lymphoplasmacytic Hypophysitis

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We report the case of a 37-year-old mentally retarded woman who died suddenly with premortem clinical signs of diabetes insipidus. At autopsy, her pituitary was infiltrated and destroyed by a lymphoplasmacytic infiltrate, affecting the posterior pituitary more severely than the anterior pituitary. Vitreous electrolyte showed a pattern of hypertonic dehydration, compatible with diabetes insipidus.

Key Words: Diabetes insipidus—Hypophysitis—Pituitary—Sudden death—Vitreous electrolytes.

Granulomatous hypophysitis is a rarely described entity that may result in the destruction of the anterior pituitary, with resultant loss of hormonal function (1–4), or the posterior pituitary, resulting in diabetes insipidus (5,6). We describe here a case of sudden death in a patient with signs of diabetes insipidus, whose pituitary showed extensive destruction by a lymphoplasmacytic infiltrate.

CASE REPORT

The decedent was a 37-year-old black woman with a past history of mental retardation, seizures, and hypothyroidism, for which she received replacement therapy. She lived in a group home for the mentally retarded. Ten days before her death she had been admitted to a local hospital for recurrent vomiting. At the time of admission, she showed significant dehydration with serum chemistries as follows: osmolality, 351 mosm/kg (normal 280–300); sodium, 161 mEq/l (normal 136–146); chloride, 131 mEq/l (normal 95–105); glucose, 273 mg/dl (normal 70–110). Despite therapy, her sodium and glucose levels remained high throughout her hospitalization.

Three days after discharge, the decedent awakened after urinating in her bed. The attendant then took her to the bathroom and changed her clothes. The decedent slumped on the toilet, but was aroused. The attendant left the room for a few minutes, then returned to find the decedent unarousable.

AUTOPSY FINDINGS

Significant findings at autopsy were limited to the central nervous system. The brain was markedly small, weighing 630 g. The anatomical structures of the brain were also small, but had appropriate architecture, and the ventricles were not dilated.
The pituitary gland was slightly enlarged and appeared yellowish on cut surface, without evidence of hemorrhage or tumor.

Microscopically, there was extensive replacement and destruction of the pituitary by a polymorphous inflammatory infiltrate (Fig. 1). Most of the cells appeared to be plasma cells, some of which contained definite Russell bodies. Lymphocytes, foamy macrophages, neutrophils, and a few multinucleated giant cells were also present. Much of the anterior pituitary was affected in this manner, with a few residual cords of epithelial cells sepa-
FIG. 3. The hypothalamus contained focal, dense perivascular and meningeal infiltrates. The parenchyma displayed gliosis and vascular proliferation.

rated by clusters of inflammatory cells (Fig. 2). Essentially no remaining posterior pituitary could be identified.

In the hypothalamus, there was a focal, intense lymphoplasmacytic infiltrate in the meninges and around blood vessels, and occasionally in the brain parenchyma (Fig. 3). The inferior portion of the hypothalamus showed gliosis and vascular proliferation.

Results of clinical chemistry examination on a sample of vitreous humor were as follows: sodium, 175 mM; potassium, 5.8 mM; chloride, 149 mM; urea nitrogen, 27 mg/dl; creatinine, 0.8 mg/dl; glucose, 662 mg/dl. These results indicate a marked degree of dehydration.

No other evidence of autoimmune disease was found at autopsy.

DISCUSSION

The patient’s clinical syndrome at the time of her premortem hospitalization was characteristic of diabetes insipidus, with elevated serum osmolality, sodium, and glucose. Similar findings were identified in a postmortem sample of vitreous; these results were essential to the diagnosis. The modest elevation of urea nitrogen associated with the more substantial increase in sodium and chloride is characteristic of hypertonic dehydration (7), which can be seen in diabetes insipidus. Diabetes insipidus can arise from any injury to the posterior pituitary, including inflammatory or neoplastic causes. In this case, both the anterior and the posterior pituitary were heavily infiltrated with a chronic inflammatory infiltrate composed of plasma cells, lymphocytes, and macrophages. There was a moderate amount of residual anterior pituitary tissue, and it seems unlikely that the patient’s past history of hypothyroidism could be attributed to this pituitary abnormality. However, the posterior pituitary was completely destroyed, and loss of its function probably was directly responsible for her death.

Inflammatory hypophysitis has been reported rarely in the literature. Case reports have described anterior pituitary dysfunction associated with giant cell granuloma (1), Wegener granulomatosis (4), and a syndrome of apparently primary lymphocytic hypophysitis (2,3). This latter syndrome is speculated to be autoimmune in origin. It has been described primarily in women, most of whom were peripartum (2), but at least one man with the syndrome has been described (3). Inflammatory involvement of the posterior pituitary seems to be even less common (5,6). In the case described here, both the anterior and posterior pituitary were affected, although the predominant clinical manifestations were of posterior pituitary dysfunction.

In summary, this case demonstrates an unusual syndrome of lymphoplasmacytic hypophysitis involving the posterior lobe of the pituitary more than the anterior, leading to diabetes insipidus and sud-
den death from dehydration. Vitreous electrolyte determination was critical to the diagnosis.

REFERENCES