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## Postpartum Delirium Secondary to Diabetes Insipidus Following Cesarean Section

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**Introduction:** Postoperative delirium is usually described in the elderly surgical population after general anesthesia. We present a case of progressive confusion following an uneventful Cesarean Section (CS) under combined spinal-epidural (CSE). Mental status changes were caused by severe hyponatremia with central diabetes insipidus (DI) due to lymphocytic hypophysitis. We describe the presentation, diagnosis, and management of this rare syndrome of pituitary stalk inflammation.

**Results/Discussion:** A 44 yr old G4P0 female presented for CS for breech presentation and placenta previa. The pregnancy was complicated by pregnancy-induced hypertension (PIH) and insulin dependent gestational diabetes. All blood and urine tests were normal. The CS under CSE was uneventful and the patient received 2L Lactated Ringer's and 0.5L Hespan with a 250cc urine output. Within a few hours postoperatively, the patient became progressively agitated, disorientated, and finally unresponsive. Oxygen saturations, ABGs, hematocrit, and blood glucose were all normal and stable. There were no signs of postpartum hemorrhage. Neurological exams were unchanged except for deteriorating mental status. The patient was transferred to the ICU. Further tests showed a sodium of 187 mEq/L with an urine output of 800cc/h and a low urine osmolality of 229 mOsm/k. Hormonal studies were equivocal, with prolactin, cortisol, and ACTH being slightly elevated and TSH, GH, LH, FSH, and ADH being normal to slightly low. An MRI of the head showed features consistent with postpartum, lymphocytic hypophysitis, or swelling of the pituitary stalk, in addition to an incidental, small subdural. There were no indications of Sheehan Syndrome. The patient was diagnosed with central DI and subsequently responded to fluid resuscitation and repeated doses of DDAVP (0.2 mcg IV). Within three days, the patient's sodium corrected to 139 mEq/L and the urine output decreased to 50cc/hour with an osmolality of 570 mOsm/k. The patient became alert and oriented with no residual neurological damage.

**Conclusion:** Postoperative delirium following a CS under regional is extremely rare. Differential diagnosis includes hypoxia, hypotension, pain, infection, residual medication effects, brain injury, psychiatric illness, and metabolic or endocrine disturbances. Puerperal psychosis as a result of a chronic, subdural hematoma has been reported as an etiology of postpartum confusion<sup>1</sup>. We present a case of postoperative delirium resulting from central DI due to lymphocytic hypophysitis. Central DI is characterized by decreased hypothalamic antidiuretic hormone (ADH), causing high urine outputs, urine specific gravity <1.005 with an osmolality less than 200 mOsm/k, and an elevated serum sodium level. Central DI in the postpartum period is most commonly associated with Sheehan Syndrome. Lymphocytic hypophysitis is only suspected based on its time of presentation and lack of association with an obstetric hemorrhage, shock, or Sheehan Syndrome. It is an autoimmune lymphocytic inflammation of the pituitary first described in 1962 in a postpartum female who died following an appendectomy.<sup>2</sup> Due to hormonal changes in pregnancy, the size of the pituitary gland increases 400% and then quickly returns to baseline with delivery. As the pituitary grows, antibodies are produced. This autoimmune reaction probably triggers the pituitary's involution postpartum.<sup>3</sup> Presentation of lymphocytic hypophysitis varies depending on the degree of inflammation. Early diagnosis and treatment of DI and lymphocytic hypophysitis is essential, as deaths have been reported due to prolonged pituitary insufficiency and electrolyte disturbances. Treatment consists of slow correction of serum sodium (0.5mmol/L/hr) with hypotonic fluids and DDAVP until serum sodium levels correct. Symptoms unresponsive to this may necessitate glucocorticoid ± surgery for pituitary decompression. This case highlights the importance of including an electrolyte screen in the work-up for altered mental status. Early management of such disturbances is important for a favorable outcome. Clinicians must consider the possibility of a metabolic or endocrine disorder when diagnosing postoperative delirium.

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**References:**

1. Campbell D and Varma T. Chronic Subdural Haematoma Following Epidural Anesthesia Presenting as Puerperal Psychosis. *British Journal of Obstetrics and Gynaecology* 1993;100:782-84.
2. Goudie RB, Pinkerton PH. Anterior Hypophysitis and Hashimoto's Disease in a Young Woman. *Journal of Pathological Bacteriology* 1962;83:584-585.
3. Hesselink J. Sella and Parasellar Regions. *Spinwarp.ucsd.edu* 2003:1-5.