

PBLD #12: Perioperative Management of Diabetes Insipidus in Children

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Objectives: After this PBLD, the participant will be able to:

1. Perform an adequate preoperative assessment of a child with a craniopharyngioma scheduled for craniotomy.
2. Provide a plan for the preoperative management of DDAVP and intraoperative management of fluids
3. Identify and manage intraoperative diabetes insipidus
4. Identify and manage postoperative diabetes insipidus
5. Transition the child from intravenous pitressin and fluids to oral intake of fluids and IN/PO DDAVP

Key Questions:

A. Preoperative:

1. What if any preoperative laboratory tests would you obtain in this child? What preoperative information is essential for your anesthetic management?
2. The child is presently on DDAVP and serum sodium is 141, is this appropriate? Does BID or QD dosing of DDAVP affect your anesthetic management? Would the type of surgical procedure (i.e. minor- minimal blood loss or major-significant blood loss) affect your pre-operative management?
3. How would you dose the DDAVP on the day of surgery? What would be your preference for case order?

B. Intraoperative:

1. You held the AM dose of DDAVP and the child is scheduled as the first case, what fluids would you use and at what infusion rate? What intraoperative monitoring do you prefer to use? A-line? Central line? Foley catheter?
2. The induction is uneventful but four hours into the case the child's urine output increases to greater than 4 cc/kg/hr. Is this diabetes insipidus (DI)? What would be in your differential? What laboratory studies would you like to obtain? Does the use of mannitol or lasix influence your decision?
3. The serum sodium is 154, what would you like to do now? Change your intravenous fluids? To what? What rate? Titrate to what? Would you provide a one time dose of DDAVP? Start a pitressin infusion? One time dose of IV/IM pitressin? Why or why not? What is your reasoning?
4. A pitressin infusion was initiated, what is your endpoint? How would you titrate the infusion? What would be your lab schedule?
5. The 15 minutes later the urine output remains greater than 4 cc/kg/hr and the serum sodium is 150, what do you do?

C. Postoperative:

a. Scenario #1:

1. The patient arrives to the intensive care unit on a pitressin infusion at 2.0 mu/kg/hr and the patient is awake but somnolent. The ICU fellow is unfamiliar with the management of DI and wants to place the child on his preoperative DDAVP regimen and place the child on ½ NS at maintenance rate, is this reasonable?
2. The nurse questions this practice and notices that the blood pressure is low and wants to stop the infusion and give 500cc of lactated ringers, do you agree?
3. It is the first day post surgery and the child is awake and alert and wants juice? Do you discontinue the pitressin infusion and immediately give the child his AM dose of DDAVP? Do you discontinue the intravenous fluids or keep the same fluids and adjust the rate based on the child's oral intake?

b. Scenario #2:

1. The child did not have evidence of pre-/intraoperative DI but has been in the unit two hours and is awake and talking, the urine output increases to greater than 4 cc/kg/hr and the serum sodium is greater than 150, what do you do? The child was not on preoperative DDAVP.
2. You allow the child to take oral fluids but he does not tolerate clear liquids? He is now tachycardic and the nurse says he is in pain and wishes to give him pain medicine, do you agree? The urine output continues to remain high and the blood pressure is low, does this change your management? The pharmacist brings a dose of DDAVP rather than a pitressin infusion, what do you do? The child continues to be hypotensive and the urine output remains increased, what is your plan?