Title

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Respiratory Failure and Metabolic Acidosis Following Transurethral Resection of the Prostate

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Abstract

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INTRODUCTION: Transurethral resection of the prostate (TURP) syndrome is a rare condition classically characterized by hyponatremia, altered mental status, and hypervolemia caused by large volume bladder irrigation with hypotonic glycine or cytal solution during TURP. Ionic solutions are not traditionally used because they dissipate the cutting power of monopolar instruments.[1] However, new bipolar instruments using normal saline irrigants are purported to have fewer complications than monopolar TURP. We are the first to describe a case of TURP syndrome in a patient following bladder irrigation with normal saline.

CASE PRESENTATION: A 59 year-old male with a history of CKD and severe urinary retention secondary to benign prostatic hyperplasia underwent TURP. At the end of the procedure, the patient was noted to have a deficit of 8 liters of normal saline bladder irrigation. Shortly after completion of the procedure, the patient developed hypoxemic and hypercapnic respiratory failure requiring intubation. Labs were most notable for a severe hyperchloremic metabolic acidosis. Portable chest radiography showed flash pulmonary edema. In the ICU, he recovered rapidly with diuresis. Along with good urine output and improvement of his electrolyte disturbances, he was successfully extubated after one day. On postoperative day two, he was stable enough for transfer.

DISCUSSION: Our patient did not develop hyponatremia as classically seen in TURP syndrome. Instead, he presented with hyperchloremic metabolic acidosis and flash pulmonary edema leading to acute respiratory failure from normal saline bladder irrigation. The management of TURP syndrome is directed at correcting electrolyte and volume disturbances. Severe symptomatic hyponatremia can be treated with 3% hypertonic saline and loop diuretics can be used for volume overload. The pathogenesis of volume overload and electrolyte abnormalities in TURP syndrome is thought to occur via fluid absorption through the prostatic venous sinuses.[1] Studies have shown that longer resection times and a larger prostate increase risk of developing TURP syndrome. Other risk factors include cardiac and renal disease. Our patient had several of the aforementioned risk factors, including CKD, BPH, and a longer resection time.

CONCLUSIONS: Despite the use of technologies directed at reducing the risk of TURP syndrome, our case shows that massive irrigation of even normal saline can lead to complications, most notably profound metabolic acidosis and volume overload. This case also highlights the importance of close monitoring of irrigant use and shorter resection times to avoid life-threatening electrolyte and fluid imbalances with large volume bladder irrigation.

Reference #1: Hawary A, Mukhtar K, Sinclair A, Pearce I. Transurethral Resection of the Prostate Syndrome: Almost Gone but Not Forgotten. *J Endourol.* 2009;23(12):2013-2020.

DISCLOSURE: The following authors have nothing to disclose: Robin Guo, Marc Montecillo, Nader Kamangar

No Product/Research Disclosure Information