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TUR syndrome - A report

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A B S T R A C T

We report a case of transurethral resection of prostate (TURP) syndrome. A 80-year-old man with grade III Prostatomegaly was scheduled for transurethral resection of the prostate under spinal anesthesia. Just after the end of the surgery, the patient presented signs of TURP syndrome with bradycardia, arterial hypertension, hypoxemia and dizziness-confusion. The electrolytes analysis revealed an acute hyponatremia (sodium concentration 120.6 mmol/L) and hyperkalemia (potassium concentration 6.48 mmol/L). Medical treatment consisted of hypertonic saline solution 3% and nebulization with levosalbutamol. The presented case describes a typical TURP syndrome, which was diagnosed and treated early. The patient was discharged from hospital without any complications.

1. Introduction

Transurethral resection of prostate (TURP) syndrome is a systemic complication of transurethral resection of the prostate or bladder tumours, caused by excessive absorption of electrolyte-free irrigation fluids. This syndrome may potentially cause neurologic disturbance, pulmonary edema, cardiovascular compromise, and death.[1] Normal saline cannot be used as irrigation solution with conventional monopolar resection Glycine solution is almost universally used as an irrigation solution in traditional therapeutic endoscopic urologic procedures. The incidence of this complication is between 0.78% and 1.4%.[2] The surgeon should be informed immediately, the intervention stopped as quick as possible and the treatment should start without delay.

2. Patient and observation

We report the case of a 80-year-old male patient, who presented a severe TURP syndrome 5 minutes after surgery with severe hyponatremia. Patient under observation a 80-year-old man, on medication for same disease, body weight 45 Kg, prostate weight 69 g and dimension 57 × 45*50mm on ultrasonography and complaints of difficulty in urination and blood in urine underwent transurethral resection of prostate under spinal anesthesia with 3 ml of hyperbaric bupivacaine (0.5%) that extended to the T10 level, as tested by pin prick. The heart rate at the start of the operation was 84 bpm, blood pressure 132/76 mmHg, electrocardiogram normal and spo2 was 98%. The patient was positioned in lithotomy posture. And the TURP surgery was started. The preoperative values of serum sodium was 131 mmol/L, potassium 5.2 mmol/L "Table 1" [a]. A routine monitoring of fluid absorption by expired breath tests is not practiced in our hospital. The irrigation fluid used by urologist was glycine 1.5%. TURP was performed by monopolar instrument. The height of the irrigating fluid reservoir was fixed at 70 cm height from patient's bed. The total intraoperative bleeding was estimated at 250 ml. The amount of 1.5% glycine used intraoperatively was 24 L. The average preoperative blood pressure was 130/80 mmHg and heart rate 80 bpm. During surgery, which lasted for 68 min, the patient had been given 1500 ml ringer's lactate solution by intravenous infusion. 5 min after the end of operation, patient suddenly developed in post-op room with dizziness-confusion, pain, alteration of vision, pinpoint pupil, hypoxemia (spO2 84%), hypertension (166/90 mmHg) and bradycardia (52 bpm). The abdomen and lung auscultation were normal. He was nebulised with levosalbutamol. He was loaded with 500 ml of saline 0.9%, 300mg paracetamol inducing normalization of hemodynamics. The TURP syndrome was subsequently confirmed by an immediately electrolyte analysis revealed a decrease in serum sodium concentration from 131 mmol/L to 120.6 mmol/L and increase in potassium concentration from 5.2mmol/L to 6.48mmol/L "Table 2" [b]. The measurement of all irrigating fluids showed that 3 L had been absorbed. Blood ammonemia and glycinemia concentrations weren't measured. The blood pressure and heart rate were gradually stabilized at 120/70 and 80 bpm. A chest x-ray of the lungs and ECG were normal. He was loaded with 200 ml 3% normal saline over 6 hours. Twelve hours later, the sodium concentration increased and potassium concentration decreased "Table 3" [c]. The second postoperative day, sodium concentration and potassium concentration was normalised within normal limits. He was discharged from the hospital later on in a good condition.

3. Discussion

Transurethral resection syndrome during transurethral resection of the prostate (TURP) results from excessive absorption of electrolyte free

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Table 1
Table is showing pre-op electrolytes values of concerned patient.

Serum Sodium	Serum Potassium	Serum Calcium
131 mmol/l	5.2 mmol/l	4.65 mg/dl

Table 2
Table is showing immediate post-op electrolytes values of concerned patient.

Serum Sodium	Serum Potassium	Serum Calcium
120.6 mmol/l	6.48 mmol/l	4.44 mg/dl

Table 3
Table is showing electrolytes values of concerned patient after 12 hours.

Serum Sodium	Serum Potassium	Serum Calcium
135.2 mmol/l	3.87 mmol/l	4.16 mg/dl

irrigation fluids causing acute hypervolemia and hyponatremia. The clinical spectrum ranges from asymptomatic hyponatremia to electrocardiographic changes, nausea, vomiting, convulsions, coma, alterations of vision, pulmonary edema, cardiovascular compromise and death.[3] The role of irrigation solution is to distend the bladder, clear the surgical site and wash away resected tissue and blood. Various irrigation fluids (Glycine, sorbitol, mannitol and normal saline) have been used for TURP. Glycine solution is the most commonly used irrigant in traditional therapeutic endoscopic urologic procedures.[4] Several reports showed that Glycine absorption causes echocardiogram changes, it is associated with subacute effects on the myocardium, as T-wave depression or inversion on electrocardiography for up to 24 hours after surgery, increased Troponin. Our patient presented 5 minutes after the end of intervention. The severity of our patient's clinical picture, in contrast with moderately hyponatremia, could be explained by multiples factors: age, rapidly decrease of sodium concentration, hyperkalemia and probably hyperglycinemia. The diagnosis of TURP syndrome should be rapid, so, the spinal anesthesia is considered to be the anesthetic technique of choice, allowing early detection of neurological symptoms (patient awake). The treatment of severe TURP syndrome is based on correcting electrolytes and making patient hemodynamically stable. The diuretic therapy is not recommended in a hemodynamically unstable patient and surgery should be terminated as quick as possible. Several new procedures, such as laser ablation, laser enucleation, photoselective vaporization and bipolar resection in saline may be a good surgical alternative for preventing this complication especially in critically ill patients.[5]

4. Conclusion

The systemic absorption of such an irrigating fluid may be associated with serious complications. The best prevention method can be obtained by adopting a correct surgical technique and optimizing the patient's conditions preoperatively. At the moment, the bipolar resection in saline and laser TURP may be a good alternative procedure.

Conflicts of interest

The authors declare no competing interests.

Authors' contributions

All the authors have contributed in the report of this case. All the authors have read and approved the final version of the manuscript.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.eucr.2019.100982.

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