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Letter to the editor

Resistant Heart Block Due to Hyponatremia: A Case Report

Harish Kumar[1], Shikha Jain[1], Vaishali Waindeskar[1], Soumya Thakur[1]

[1]*Department of Anesthesiology, All India Institute of Medical Sciences, Bhopal, India.*

Corresponding author: Harish Kumar, M.D, Department of Anesthesiology, All India Institute of Medical Sciences, Bhopal, India-462026. Tel. +919471300943 – Email: harishcmckol@gmail.com

To the Editor,

In this letter to the editor, we would like to present an interesting case of resistant heart block secondary to severe hyponatremia that we recently encountered in our clinical practice. This case highlights the importance of considering electrolyte imbalances, particularly hyponatremia, as a potential cause of refractory conduction disturbances in Transurethral resection of the prostate (TURP) syndrome with slight drowsiness.

Our patient, a 64 year old Male posted for TURP, presented with intraoperative asymptomatic bradycardia and electrocardiographic evidence of 2:1 atrioventricular (AV) block (Figure 1).

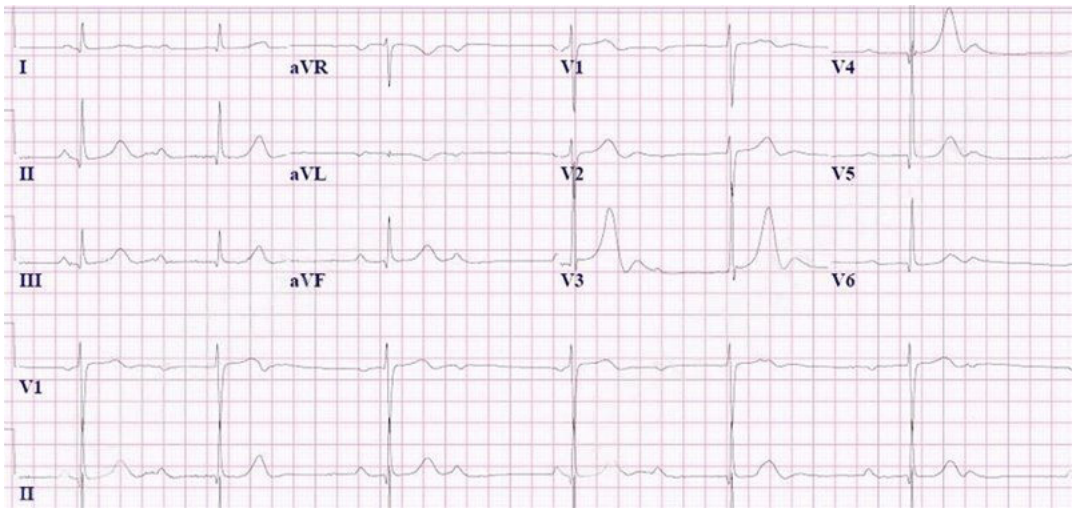

Fig. 1 — ECG showing 2:1 heart block.

Despite initial standard management with intravenous Atropine and Adrenaline, the patient's conduction abnormality persisted. Laboratory investigations revealed severe hyponatremia (serum sodium: 102 mmol/L), with associated serum osmolality of 265 mOsm/kg, indicative of severe hypo-osmolar state. The underlying cause was identified as severe hyponatremia secondary to TURP syndrome.

Pathophysiologically, hyponatremia can lead to altered cellular excitability and impaired myocardial conduction by disrupting the transmembrane sodium gradient, crucial for cardiac action potential generation and propagation. Severe hyponatremia has been linked to disturbances in ion channel functioning, particularly in the sinoatrial and atrioventricular nodes, resulting in bradyarrhythmias and conduction blocks.

Corrective measures included cautious sodium correction using hypertonic saline (3% NaCl) at a controlled rate to avoid osmotic demyelination syndrome. Serial ECG monitoring revealed gradual improvement in conduction patterns, with resolution of the heart block coinciding with normalization of sodium levels. This confirmed hyponatremia as the precipitating factor. The patient achieved complete recovery with slow correction of sodium and inotropic support.

This case underscores the critical role of electrolyte disturbances in cardiovascular conduction abnormalities. It emphasizes the need for a thorough evaluation of metabolic factors in patients with resistant heart blocks undergoing TURP. Timely identification and correction of such imbalances can prevent unnecessary interventions, including permanent pacemaker implantation.

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