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Letter to the Editor

Brief remission of cardiac conduction defect under anaesthesia during trans-sphenoidal pituitary surgery

Sir,

Acromegaly can cause paroxysmal arrhythmia and bundle branch blocks, which may or may not be symptomatic. Physiological stress induced by anaesthesia can exacerbate cardiac problems; nevertheless, reversal of such problems can also occur despite being uncommonly reported.[1,2] We describe temporary remission of left bundle branch block (LBBB) to normal sinus rhythm under general anaesthesia.

A 56-year-old male diagnosed case of acromegaly was posted for endoscopic pituitary surgery under general anaesthesia. Preoperative electrocardiography (ECG) revealed a left bundle branch block (LBBB) Figure 1 (A). A 2-D echocardiography suggested mild mitral regurgitation and a left ventricular ejection fraction of 35-40%. Informed consent was obtained for anaesthesia, including the risk of major perioperative adverse cardiac events (MACE). Pre-induction, wide QRS complexes were seen on ECG, with a heart rate (HR) of 102 beats per minute (bpm), blood pressure (BP) of 140/88 mmHg, and oxygen saturation of 98% on room air. Anaesthesia was induced using morphine, propofol, and atracurium. Injection Xylocard was given 90 seconds before the tracheal intubation with an 8.0 mm endotracheal tube using a video laryngoscope. The induction was smooth with no swings in haemodynamics. Anaesthesia was maintained with propofol infusion, nitrous oxide, and oxygen mixtures. Approximately 20 minutes post-induction, rhythm change was detected, whereby LBBB was replaced by normal sinus rhythm (NSR) at HR of 54-65 bpm Figure 1 (B). NSR persisted for the entire procedure. Upon completion of the surgery, the patient received ondansetron, paracetamol, and neostigmine /glycopyrrolate before extubation. Minor hemodynamic disturbances observed during emergence were succeeded by the recurrence of wide QRS complexes, like preoperative ECG Figure 1 (C). He was monitored in the intensive care unit and remained stable despite the reappearance of LBBB.

An intricate balance of sympathetic and parasympathetic output is required to maintain the cardiovascular rate and rhythm. Autonomic nervous system is further controlled by endocrine orchestras. Acromegaly can cause a variety of cardiac manifestations by influencing rate, rhythm, and valvular structure. Risk of cardiac complications increases by more than 60% in patients with acromegaly.[3]

Anaesthesia is a stressful state which can cause unmasking of the underlying cardiac abnormality and even worsen the diagnosed conditions.[1] Limited cases have been reported where anaesthesia has proven a boon in cardiac patients.[2] The paroxysmal appearance of the LBBB depends on the critical HR and timing of conduction in the cardiac cycle. Minute variations in HR can cause the disappearance of the block depending upon the critical HR.[4]

Anaesthesia drugs have negative chronotropic and dromotropic effects that might cause changes in the conduction velocities.[5] During emergence, a transient rise in HR and intrathoracic pressures increase myocardial demand and can precipitate bundle blocks. We believe the same phenomenon occurred in the indexed case. Tests such as Valsalva manoeuvre can identify rate-dependent bundle blocks, however, not popular in neurosurgical populations afflicted with intracranial pathology, with the apprehension of raised intracranial pressures.[4]

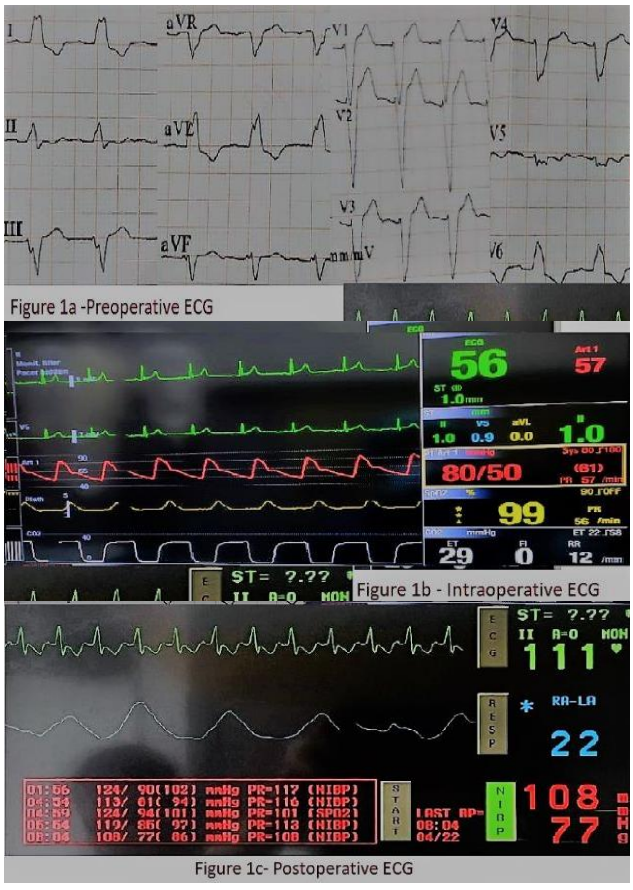

Figure 1 (A-C): Variation in cardiac rhythm at different heart rates in a patient. Preoperative LBBB at 102 beats/min, intraoperative NSR at 56 beats/min, post-op reappearance of LBBB at 111 beats/min.

To conclude, anaesthesiologists should be aware of the overwhelming phenomenon that heart rate altered by anaesthesia drugs can cause transient changes in cardiac rhythm. However, intermittent bundle branch blocks may dissipate or precipitate dependent on the critical heart rate.

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