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Short Communication

Effect of intra-operative patient positioning on cardiac rhythm

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Positioning during any surgery is an important determinant of physiological changes ought to happen during the procedure. Here we present two cases which are different by patient profile and surgical procedure, but have shown us rhythm abnormality which can be associated with the positioning of the patient.

55-year-old male, ASA-1 with adequate airway parameters, presented with history of change in voice since 1 month, diagnosed to have vocal cord polyp. Surgeons decided to go for biopsy of the polyp. For this case, general anaesthesia with endotracheal intubation for securing airway was planned. Patient intubated with 6 mm cuffed PVC ET tube as microlaryngeal cuffed tubes were not available. For adequate exposure of the vocal cords, patient was given rose position with atlanto-axial joint hyperextension. As this position was achieved, patient developed arrhythmias, characterised by absence of p-waves and complete hemodynamic stability. This can be called as junctional rhythm, as these arrhythmias were also associated with complete repolarisation. These arrhythmias were present throughout the surgery, blunted with Inj. Loxicaid, and once the surgical procedure was concluded and patient's neck brought back to neutral position, arrhythmias were subsided. During the surgical procedure, we had asked to relax the neck, but as the larynx was anterior, surgeons could not reduce the extension. After extubation, patient was hemodynamically stable.

65-year-old male, previously operated case of sigmoid volvulus, posted for stoma reversal. Patient was ASA-1, with adequate nutritional status and adequate airway parameters. Plan of anaesthesia was general anaesthesia with endotracheal intubation for securing airway and epidural catheter placement at the level of T12-L1 for intra-operative and post-operative analgesia. Intra-op during the exploration of distal bowel end, surgeons asked to do Trendelenburg position for easy handling. Head down was done of around 45-50 degrees. After two minutes, patient developed arrhythmias, with complete hemodynamic stability and absence of p-waves, associated with complete repolarisation. These arrhythmias were not associated with epidural top-ups and subsided transiently with inj. Loxicaid.

Every surgical procedure requires positioning the patients: therefore, all surgical positions are associated with the potential for the patient to experience a positioning injury.¹ The alteration in autonomic tone imposed by the conduct of anaesthesia and surgery predispose patients to ventricular ectopy.² Several factors tend to emerge when one evaluates perioperative dysrhythmias; these are the anaesthetic agent given, the site of surgery, abnormalities of blood gases or electrolytes, tracheal intubation, reflexes such as vagal slowing and the oculocardiac reflex, stimulation of the central nervous system, the presence of pre-existing heart disease, and the use of intracardiac devices.^{3,4}

In any surgical procedure, maintaining haemodynamic stability is of utmost importance to an anaesthetist. Any

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factor that deviates from normal physiological homeostasis, must be evaluated and corrected intra-operatively. That is why, special emphasis must be given for the cause of onset and management of these arrhythmias.



Fig. 1: Extreme trendelenburg positioning for stoma closure surgery



Fig. 2: Arrhythmias observed during head down positioning

In both the ASA-1 cases, development of sudden onset dysrhythmias was observed intra-operatively. In post-operative period, both the patients were hemodynamically stable with normal rate and rhythm. Intra-operative dysrhythmias may be associated with over positioning of the patient for adequate surgical exposure. They were sudden onset, transient and disappeared when surgery is concluded and patient kept in neutral position.

Whenever a dysrhythmia presents, we have to rule out all the causes that can alter normal conduction physiology of myocardium. As from the literature and research, perioperative stress, method of induction of anaesthesia, type of anaesthetic drugs used, arterial blood gas (ABG) abnormalities, intubation, nerve stretching, pre-existing cardiac conditions, all these causes can precipitate abnormal rhythm. In the presented cases, most of the causes were ruled out and this pointed towards the undue positioning that led to vagal or sympathetic trunk stretching/ compression, presenting as dysrhythmias. To conclude this, further patient enrolment having different positioning for various surgical approaches is a must. In a nutshell, intra-operative dysrhythmias have to be studied in terms of the cause of onset, extent and their association with hemodynamic instability and types of positioning. As most of them are self-resolving, more emphasis must be given on reason of onset. Their association with patient positioning is an interesting topic to learn in a vast sample size.

1. Conflict of Interest

None.

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