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Case Report

Anaesthetic management of emergency exploratory laparotomy for ruptured ectopic pregnancy in a patient with Ebstein's anomaly and Wolff-Parkinson-White syndrome: a challenge for the anaesthesiologists

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ABSTRACT

Ebstein's anomaly (incidence 1:110,000) is characterized by the downward displacement and elongation of the tricuspid valve with poorly contractile right ventricle, an enlarged right atrium along with tricuspid regurgitation. It has shown particular association with Wolf-Parkinson-White syndrome (up to 20 % of patients). Wolff-Parkinson-White syndrome (WPW syndrome) is a rare cardiac anomaly characterised by aberrant conduction pathway between atria and ventricles. Here we describe the successful management of a patient with Ebstein's anomaly and co-existing WPW syndrome, who presented in our institute with ruptured ectopic pregnancy and was posted for emergency exploratory laparotomy. The anaesthetic management of these patients is very challenging as they can develop life threatening tachyarrthmias like atrial fibrillation (AF) and paraoxysmal supraventricular tachycardia (PSVT).

Keywords: Ebstein's anomaly with WPW syndrome, Ruptured ectopic pregnancy, Anaesthetic management

INTRODUCTION

Ebstein's anomaly is a rare congenital heart disease (incidence 1 in 110,000) in which there is a downward displacement of the tricuspid valve into the right ventricle.[1]

It is frequently associated with intra-cardiac shunting, pulmonary hypertension, cardiac dysrhythmias, cyanosis and WPW syndrome.[2,3] Wolff-Parkinson-White syndrome is a pre-excitation syndrome, which results from an abnormal accessory pathway connecting the atria and ventricles, predisposing to supraventricular arrhythmias and even sudden death. The anaesthetic management of these patients has to be done very meticulously since the physiology of conduction changes after the administration of anaesthetic drugs.

CASE REPORT

A 32 year old female, G2P1L1A0 presented with the history of amenorrhoea of two and a half months with sudden onset of pain abdomen and vomiting. She gave history of palpitations and uneasiness in the past with no associated history of hypertension, diabetes or asthma. Two years back, she had an LSCS under general anaesthesia without any perioperative complications. On examination, pulse was 94bpm, irregular, BP 130/70 mm Hg and pallor was 1+.

Per abdominal examination revealed generalized tenderness in the lower abdomen. Respiratory rate was 18/min. On auscultation chest was bilaterally clear and a loud pan systolic murmur was heard in the tricuspid area. The murmur increased in intensity on inspiration. Right parasternal thrill and wide splitting of second heart sound

was observed. Chest X-ray showed cardiomegaly and enlarged right atrium. Electrocardiograph (ECG) showed decreased PR interval, delta waves (slurred upstroke of QRS), wide QRS and associated ST and T wave changes. Echocardiogram showed the presence of moderately enlarged right atrium, tricuspid regurgitation with downwardly displaced tricuspid valves, confirming diagnosis of Ebstein's anomaly.

There was no atrial septal defect or pulmonary hypertension. Her blood reports were within normal limits except for Hb which was 8.6 mg/dl. USG showed right adenaxal benign lesion with free fluid? Likely to be ruptured ectopic pregnancy.

General anaesthesia was planned for emergency exploratory laparotomy in view of? Ruptured ectopic pregnancy. In the OR, standard monitoring (NIBP, pulse oximetry, 5 lead ECG and capnography probe) was attached. All routine and emergency drugs and equipments were kept ready. Rapid sequence induction was done after pre-oxygenation for 3 minutes. Patient was induced with Inj. Propofol 100 mg i.v. slowly and Inj. Succinylcholine 75 mg i.v., for intubation.

Oral endotracheal intubation was done with endotracheal tube of internal diameter 7.0 mm. Cricoid pressure was continued till the inflation of tube cuff. Patient was maintained on isoflurane 1% in O_2 and N_2O through Bain's circuit. Injection Fentanyl 50 micrograms i.v., Injection Midazolam 1 mg iv was given. Relaxation was maintained with the loading dose of Injection Vecuronium 4 mg i.v., followed by maintainence dose of Injection Vecuronium 1 mg i.v. repeated every 15-20 minutes. The operation was completed in 55 minutes with no untoward incidence.

On return of spontaneous ventilation, reversal was done using Injection Neostigmine 2.5 mg i.v. along with Inj. Glycopyrrolate 0.5mg i.v.; oral suction was done followed by extubation. Patient was conscious, oriented and was then shifted to post-operative recovery room. No complications were seen during the post-operative period.

DISCUSSION

Wilhelm Ebstein first described the clinical and anatomical features of an anomaly of the tricuspid valve in 1866,[1] which occurs in 1 in 110,000 of the general population. The proximal part of the right ventricle is 'atrialised', becoming thin walled and poorly contractile, along with an enlarged right atrium.[2]

Disease severity depends upon the degree of valvular abnormality, pulmonary hypertension, presence of a patent foramen ovale, ventricular and supraventricular tachyarrhythmia's and association with Wolf-Parkinson-White syndrome.[2,3] WPW syndrome is currently defined as a congenital abnormality involving abnormal conductive pathway in association with supraventricular tachycardia (SVT). The genesis of reentrant SVT involves the presence of dual conducting pathways between atria and ventricles.[4]

1. The natural atrio-ventricular (AV) nodal-His purkinje tract.

2. One or more accessory tract (Kent fibers or Mahaim fibers).

Congestive heart failure and sudden collapse are the most common causes of death.

There are references showing disappearance of delta waves after propofol administration, making it the drug of choice for induction.[5] Isoflurane and sevoflurane have been found to have no effect on AV node conduction and this may make these agents preferable to halothane for maintenance of cardio stability under anaesthesia after the manifestation of the WPW pattern.

Isoflurane in addition has been found to increase accessory pathway refractory period unlike halothane that has no such effect.[6] Vecuronium, due to its cardio stable effect, may be preferred over pancuronium. Of the newer muscle relaxants, cis-atracurium may be the agent of choice because of its high autonomic safety ratio and absence of histamine release. Mivacurium, if available, would be an acceptable choice as reversal of neuromuscular blockade using neostigmine and atropine is not required.[7]

To conclude, women with Ebstein's anomaly and WPW syndrome may present with multiple problems and are considered as high risk and cared for in tertiary centres by a multidisciplinary team including obstetricians, cardiologists and anaesthesiologists during perioperative periods.

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