Academic Sciences International Journal of Pharmacy and Pharmaceutical Sciences

ISSN- 0975-1491 Vol 4, Issue 2, 2012

Research Article

ANAESTHETIC MANAGEMENT OF WOLFF-PARKINSON -WHITE SYNDROME FOR ELECTIVE CAESAREAN SECTION

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Received: 8 April 2011, Revised and Accepted: 28 Sep 2011

ABSTRACT

Wolff-Parkinson-White (WPW) syndrome is a disorder of heart having abnormal electrical communication between atria and ventricles. We report a case of WPW syndrome posted for elective caesarean section under combined spinal epidural anaesthesia. She was managed successfully under regional anaesthesia. This case was a challenge as life threatening complication like paroxysmal supraventricular tachycardia (PSVT) and atrial fibrillation (AF) may occur perioperatively. We suggest that, to deal with these complications, anti-arrhythmic drugs and defibrillator should be kept ready. Secondly, regional anaesthesia is preferred over general anaesthesia to avoid polypharmacy and noxious stimuli of intubation.

Keywords: Anaesthesia spinal, Anaesthesia epidural, Wolff Parkinson White syndrome, Arrhythmia, Caesarean section.

INTRODUCTION

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.[1]

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

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

It is the most common type of ventricular pre-excitation arrhythmia. Incidence of pre-excitation syndrome varies from 0.1-3 per 1000 in healthy subjects.[2] The diagnosis is done by history and electrocardiograph (ECG), which shows decreased PR interval (<120 milliseconds), delta wave & wide QRS complex. Electro physiological (EP) testing can provide useful information in a patient with the WPW syndrome. Two major EP criteria described in determining an increased risk of sudden death, shortest PR interval <250 milliseconds and antegrade effective refractory period of the accessory pathway < 270 milliseconds. Under anaesthesia physiology of conduction changes & precipitate complication, thus it is important to know about the management of a case of WPW syndrome.

CASE REPORT

A 30 years old primigravida, at 39 week gestation, was planned for elective caesarean section. Indication for caesarean section was non progression of labour. She was a known case of WPW syndrome, but asymptomatic at the time of surgery. She gave history of palpitation & uneasiness in the past. There was no history of palpitation, syncope, dizziness and chest pain at the time of surgery, & she was not a known case of hypertension, diabetes & ischaemic heart disease. Consultation with the Cardiologist was done. As the patient was asymptomatic, no treatment started before operation.

On preanaesthetic examination, her pulse rate was 88 per minute, blood pressure was 118/82 mmHg and preoperative SpO_2 was 100%. On auscultation chest was clear bilaterally. Electrocardiograph (ECG) showed decreased PR interval, delta waves (slurred upstroke of QRS), wide QRS & associated ST and T wave changes. The 2D-echocardiography (ECHO) showed normal valvular & ventricular function with 58% ejection fraction. Laboratory tests including complete haemogram, liver function test, renal function test, serum electrolytes and coagulation profiles were normal.

The patient was counseled and consented. On the night before surgery, tab. Ranitidine 150mg was given orally. Patient was kept fasting for 6 hours and tab. Ranitidine 150 mg given in early morning on the day of surgery.

Anaesthetic technique- To avoid sympathetic stimulation during intubation & emergence we planned to perform the case under combined spinal epidural anaesthesia.

After 2% Xylocard local infiltration intravenous (IV) access secured with 18-G canula and patient was preloaded with 500 ml normal saline slowly over 20 minutes. In operating room routine standard monitoring NIBP, pulse oximeter (SpO_2), and 5 leads ECG were attached. The anti-arrhythmic drugs like adenosine, diltiazem, esmolol, lignocaine, amiodarone, phenylephrine, inotropes and defibrillator were kept ready.

Under all aseptic precaution, an 18 gauge Tuohy needle (portex) was introduced at the L3-L4 interspace & 18 gauge epidural catheter was inserted and fixed in left lateral position. The subarachnoid space was located using a 26 gauge Quincke needle, a 1.8 ml of 0.5% hyperbaric Bupivacaine was administered intrathecally. The patient was subsequently placed in wedged supine position & slightly head up position. A T8 sensory block to pin prick was achieved, this was further extended with fractionated doses of plain 0.5% Bupivacaine administered through the epidural catheter till the block height reached T5 level.

Oxygen supplementation (FiO2=0.5) was administered via venturi mask. Cardiovascular parameters remained stable during the development of block & surgery. Following delivery of baby IV inj. Midazolam 1mg was given. A healthy baby of 2.8kg was delivered and APGAR scores were 8 and 9 at 1 and 5 minutes respectively. The uterus contracted well so Inj. Oxytocin was withheld. Immediately after surgery she was transferred to ICU with epidural analgesia (0.125% of Bupivacaine) for 24 hrs thereafter she received inj. Tramadol 100 mg IV s.o.s. on demand. The subsequent course in hospital was uneventful & she was discharged on 8th postoperative day with advice to get cardiologist consultation.

DISCUSSION

WPW syndrome may have a genetic component & inherited as a familiar trait, with or with out associated congenital heart diseases (CHD).[3] Most common associated CHD are Ebstein anamaly of the tricuspid valve and corrected transposition of the great arteries.

Patient with WPW syndrome have an accessory AV pathway and bypasses the natural AV nodal pathway, this may lead to reentrant tachyarrhythmia and sudden cardiac arrest.[4] Some associated factors that perpetuate the dysrrhythmias are coronary heart disease, Ischaemia, cardiomyopathy, Pericarditis, Electrolyte imbalance, Thyroid disease and anaemia. It has been suggested that

the aim of the anaesthetic management should be the avoidance of sympathetic stimulation such as pain, anxiety, stress response to intubation and hypovolaemia.

Regional anaesthesia is preferred technique over general anaesthesia to avoid multidrug administration and sympathetic stimulation during intubation.[5, 6] Preloading should be done because, preloading not only helps to prevent decreased atrial filling, but also reduces sympathomimetic requirement, which may trigger PSVT.[7] Epidural anaesthesia is preferred to spinal due to controlled and segmental block with better haemodynamic stability.[8] Although cases are reported under spinal anaesthesia, vasopressure used for the treatment of hypotension, because of spinal block can be the initiators of tachycardia and arrhythmias.[9] We choose combined spinal epidural anaesthesia for our patient because of its reliability, better haemodynamics and postoperative management. We were preload our patient adequately and use phenylephrine to control hypotension that increase blood pressure without increasing the heart rate.[9] For postoperative analgesia we preferred low concentration of Bupivacaine epidural infusion.

In general anaesthesia Thiopentone and Propofol both can be used. Isoflurane and Sevoflurane have no effect on AV node so preferred these inhalational anaesthetic agents. Fentanyl in dosage between 30-50 mcg/kg when used along with Droperidol, has shown excellent effect. Muscle relaxants Rocuronium & Vecuronium are cardiostable and preferred. Newer relaxants Cis-atracurium and Mivacurium can be safe because no reversal agent required for them.[5, 6] Neostigmine may enhance accessory pathway during AF associated with WPW syndrome.[10] Drugs atropine, ketamine, pancuronium, halothane precipitate tachycardia, therefore should be avoided.

Treatment of WPW syndrome is directed at the underlying cause either uses of radio frequency ablation (RFA) of the accessory pathway (AP), anti-arrhythmic drugs slowing AP conduction or AV nodal blocking medication to slow AV nodal conduction. Magnesium has been used for treatment of paroxysmal atrioventricular tachycardia in WPW syndrome. Magnesium causes prolongation of PR interval without any significant effect on refractory period of accessory pathway.[11]

During the perioperative period if some arrhythmias like an acute episode of reciprocal narrow QRS tachycardia occurs, than vagal maneuvers are tried initially if not successful then adenosine followed by intravenous Verapamil or Diltiazem are the other alternative.[2]

An external cardioverter –defibrillation is done in case of unstable tachycardia. If AF is suspected, drugs that prolong refractoriness in accessory pathways (Procainamide, Propranolol) must be used & avoid Verapamil and Digoxin. Electrical cardioversion should be done in case of haemodynamic compromise or ventricular fibrillation.[12] Refractory arrythmias has been managed with Phenylephrine by acting directly to stimulate the arterial baroreceptors and hence vagal tone.[10]

We conclude that patient with WPW syndrome can be managed successfully under combined spinal epidural anaesthesia. We prefer adequate preloading and treatment of hypotension with phenylephrine. Antiarrythmic drugs and defibrillator must be kept ready.

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