Wolff-Parkinson White syndrome in a parturient with rheumatic heart disease for caesarean section – Anaesthesia management

Sir,

A 28-year-old multiparous lady, a known case of rheumatic heart disease (RHD), who had undergone balloon mitral valvotomy for severe mitral stenosis (MS) was scheduled for elective caesarean section in her 34th week of pregnancy. She presented with sudden onset of exertional dyspnoea (NYHA grade III), orthopnoea, and palpitations. She was receiving tablet digoxin. She had a tachyarrhythmia that was responsive to adenosine and metoprolol, thereby hinting a possibility of Wolff–Parkinson–White (WPW) syndrome with atrioventricular nodal re-entrant tachycardia (AVNRT). Digoxin was discontinued. However, the patient continued to have recurrent episodes of supraventricular tachycardia (SVT) necessitating cardioversion despite adequate β blocker therapy, and hence, flecainide tablet 50 mg BD was commenced. Twenty-four-hour Holter evaluation revealed ill sustained SVT, as shown in Figure 1 (ECG showing pre-excitation

suggesting an accessory pathway; sinus tachycardia with a heart rate of 133/min). Echocardiography showed moderate MS (mitral valve area – 1.4 cm^2, mean gradient – 14 mmHg) and moderate mitral regurgitation with mild pulmonary hypertension. After obtaining high-risk consent, monitors including electrocardiogram, pulse oximeter, non-invasive blood pressure, temperature probe were attached, two wide bore intravenous (IV) cannulae were secured and aspiration prophylaxis was given. Our choice of anaesthetic technique was epidural local anaesthetic with intrathecal opioid. A 16-gauge (G) epidural needle was inserted in T12-L1 intervertebral space. As the meniscus sign is unreliable to rule out intravascular placement in pregnancy[1], we used a test dose of 3 cc of 1.5% lignocaine + 15 μg of adrenaline[2] to avoid life threatening dysrhythmias consequent to the use of large volumes of local anaesthetic. Adrenaline in 5 μg/cc use would detect intravascular placement with minimal increase (20 beats per minute) in heart rate. Hence, weighing the benefits against the risks, the above mentioned test dose was used**.** Intrathecal fentanyl 25 μg was given at the L3-4 space using 25-G Quincke's spinal needle. Anaesthesia and motor block up to T4 level was achieved with 4 cc + 2 cc of 2% epidural lignocaine followed by 4 cc + 4 cc of 0.5% bupivacaine given in a titrated manner. Any drop in the mean arterial pressure below 60 mmHg was treated with phenylephrine 40 μg IV. Perioperative period was uneventful. Postoperative analgesia was maintained with epidural bupivacaine 0.0625% + 40 μg of buprenorphine for 2 days and acetaminophen.

Our perioperative goals were to maintain haemodynamic stability, avoid arrhythmias, and to immediately treat arrhythmias if precipitated intra-operatively. We opted for an epidural only anaesthetic to avoid sudden hypotension (with spinal anaesthesia) and airway manipulation, sympathetic response, and multiple drug usage (with general anaesthesia) that may be detrimental in a stenotic cardiac lesion. Wu *et al*. investigated 48 pregnant women with RHD and MS who underwent caesarean section under epidural anaesthesia and concluded that epidural anaesthesia can be successfully used and provide stable haemodynamics.[3] We refrained from inserting a central venous line as studies have shown that sustained and dangerous arrhythmias could occur with guide wire insertion of central line, especially in patients with an irritable myocardium.[4]

Pregnancy is pro-arrhythmic and increases the risk of SVT, especially in patients with congenital or structural heart disease.[5] A major concern while treating arrhythmias in pregnancy is the effect of antiarrhythmic agents on the foetus. All commonly used drugs cross placenta and are excreted in breast milk.[6] Hence, it is advisable to provide definitive treatment of an arrhythmia with ablation before a planned pregnancy. Non pharmacological

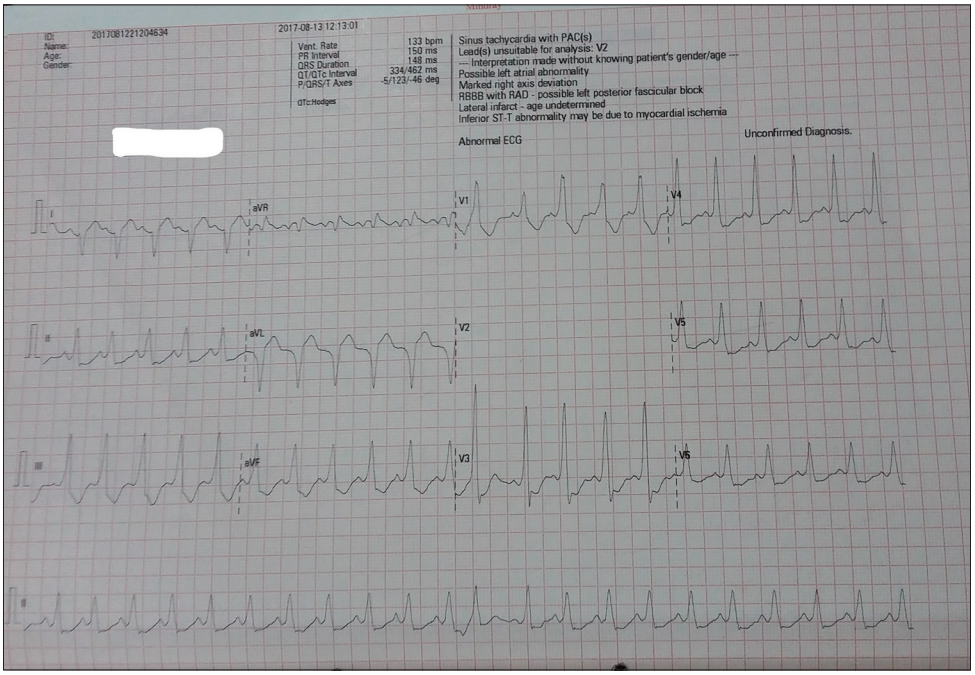

Figure 1: ECG showing pre-excitation suggesting an accessory pathway; sinus tachycardia with heart rate of 133/min

treatment such as carotid sinus massage and valsalva manoeuver cause vagal stimulation, inhibit conduction in AV node, and help resolve paroxysmal SVT. Pharmacological treatment is best reserved for those with haemodynamic changes, severe symptoms, or sustained arrhythmias. Adenosine is the drug of choice. The ACC/AHA/ESC guidelines recommend the use of IV propranolol or metoprolol if adenosine fails, and if arrhythmia still persists it recommends the use of verapamil.[7] In case of resistance to pharmacotherapy or maternal instability, aggressive management strategies such as electrical cardioversion should be considered.[8] Cardioversion has been found to be safe in all stages of pregnancy as negligible current reaches the foetus.[4] However, transient foetal dysrhythmia may occur which warrants foetal heart rate monitoring.

We conclude that regional anaesthesia is a feasible, safe option for caesarean section in patients with structural cardiac lesion with SVT. The success depends on thorough knowledge, meticulous planning, and effective collaboration between the gynaecologist, cardiologist, and anaesthesiologist.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

Rachana Chhabria, Prajwala S Kaushik

Department of Anaesthesia, Seth GSMC, KEM Hospital, Mumbai, Maharashtra, India

Address for correspondence:
Dr. Prajwala S Kaushik,
Department of Anaesthesia, Seth GSMC, KEM Hospital,
Mumbai, Maharashtra, India.
E-mail: olesi_psk@yahoo.com

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