

International journal of medical science and clinical Invention

Volume 1 issue 6 2014 page no. 310-315 ISSN: 2348-991X

Available Online At: <http://valleyinternational.net/index.php/our-jou/ijmsci>

Anaesthetic Management Of A Parturient With Wolff Parkinson White Syndrome Posted For Caesarean Section.

Dr. Sunita Y. Shende, Dr. Prakash R. Dhumal, Dr. Vikas A.kurhekar

Correspondence:

Dr sunita yashvant shende

arihant galaxy ,ground floor no1,, ganeshnagar,opposite civil hospital, sangli, sangli, maharashtra 416416
India

Email : sshende79@gmail.com

Abstract:

We report a case of Wolff Parkinson White syndrome in 22 year old parturient posted for elective lower segment caesarean section. Patient had 3 episodes of paroxysmal supraventricular tachycardia .Electrophysiological study confirmed diagnosis of WPW syndrome .and radiofrequency ablation carried out.Subarachnoid block was administered to avoid polypharmacy and noxious stimuli of laryngoscopy and intubation.Anaesthetic management is challenging as malignant arrhythmias like AVRT in form of paroxysmal supraventricular tachycardia,atrial fibrillation or ventricular tachycardia may occur anytime in perioperative period. It's important to know correct pathology and management modalities to prevent adverse outcome.

Key-words: Regional anaesthesia, caesarean section, WOLFF PARKINSON WHITE syndrome ,AVRT.

Introduction

Wolff Parkinson white syndrome first described in 1930 is caused by pre-excitation of ventricles by accessory pathway (bundle of Kent) bypassing atrioventricular node creating potential for development of re-entrant tachycardia. Incidence is 0.3 – 1.2% in general population¹. ECG is diagnostic with short PR interval, presence of delta wave i.e. slurred upstroke of QRS and wide QRS complex. Half of the patients are asymptomatic with only ECG s/o WPW pattern. Symptomatic patients may present with shortness

of breath, palpitations, dizziness, syncope in presence of arrhythmias.

Pregnancy is identified as risk factor for development of SVT. AV nodal re-entry and WPW syndrome comprises majority of them. Under anaesthesia physiology of AV conduction and accessory pathway changes and precipitation of life threatening arrhythmias may be troublesome.

Case Study

22 year old second gravida weighing 51 kg known case of WPW syndrome at 37 weeks of

gestation was scheduled for elective caesarean section. Patient was asymptomatic till one and half years back when she was 6 months pregnant developed first episode of SVT with heart rate of 250 beats/min. It was treated with IV diltiazem. She was prescribed with oral metoprolol and diltiazem and underwent emergency caesarean for meconium stained liquor under spinal anaesthesia uneventfully at term. After 2 weeks of caesarean she developed second episode of SVT treated with IV adenosine. Electrophysiological study showed left posterior accessory pathway with short antegrade effective refractory period and orthodromic AVRT and radiofrequency ablation was done. Patient developed third episode of SVT after 4 weeks of RF ablation. EP study and RF ablation was repeated. Patient conceived a month later and now posted for elective caesarean section.

Preoperatively patient was asymptomatic not on any medication. Pulse rate was 96/min regular, blood pressure of 124/80 mmHg and SpO₂ 99% on room air. Her cardiovascular and respiratory examination revealed no abnormality. Her routine investigations were normal with Hb 9 gm%. ECG was normal. 2D Echo showed AML prolapse, mild MR, good LV function with EF 65%. Cardiology opinion was sought. ASA II consent was obtained and patient was counselled. Spinal anaesthesia was planned. After securing 18G IV cannula preloading was done with ringer lactate

500ml over 20 minutes. Antiarrhythmic drugs like adenosine, esmolol, lignocaine, diltiazem, ionotropes, amiodarone, phenylephrine and

defibrillator confirmed. Pulseoximeter, ECG (lead II), NIBP attached. Subarachnoid block administered with 1.5 ml of 0.5% heavy bupivacaine with 15 mcg fentanyl in L3-L4 interspace with 25G Quinckes needle. T6 dermatomal level achieved. 15-20 degree left lateral tilt was given.

O₂ supplementation done @ 4 litres /min. A healthy male baby of 3 kg was delivered with APGAR score of 9 at 1 minute. Oxytocin 5 units was administered through iv infusion. Heart rate increased upto 130/min and responded to decrease in oxytocin infusion with supplemental midazolam 1mg and 50 mcg fentanyl. Apart from this brief episode of tachycardia patient remained hemodynamically stable throughout the procedure which lasted for 25 minutes. Blood loss was ≈ 500ml. Postoperative analgesia was maintained with diclofenac suppository 100 mg tds with inj tramadol 50 mg bd. Postop period was uneventful and patient was discharged on 7th postoperative day.

Discussion:

WPW syndrome is a type of pre-excitation due to presence of aberrant pathway which are electrically active muscular bridges with different excitability than normal AV conduction tissue. Pathways are congenital and cardiac anomaly may be associated. Rarely more than one pathway may be present. Rapid conduction over these pathway creates potential for life threatening arrhythmias.

3 types are common²

1)atrioventricular reciprocating i.e reentrant tachycardia

These are most common and classified as orthodromic or antidromic. Orthodromic is more common $\approx 95\%$ where impulse is conducted antegradely over normal AV pathway and retrogradely from ventricles to atrium through bypass tract .Hence characterised by narrow QRS complex tachycardia on ECG. Antidromic conduction occurs rarely $\approx 5\%$ where cardiac impulse travels antegradely from atria to ventricles in bypass tract and returns from ventricles to atria through normal AV pathway producing wide QRS complex tachycardia on ECG. Our patient had orthodromic AVRT on EP study and developed narrow complex tachycardia.

2) atrial fibrillation progressing rapidly to ventricular fibrillation due to lack of physiological delay at AV node

3)Ventricular tachycardia .

Symptomatic tachyarrhythmia typically begin in early adulthood. Pregnancy is associated with first manifestation of WPW syndrome in some women as in our case³. Pregnancy is identified as risk factor for development of tachyarrhythmias mainly because of hemodynamic, hormonal, autonomic and emotional changes. Expanded circulatory volume and altered tissue excitability irritating accessory pathway may be the causes. Estrogen may enhance cardiac excitability as in uterine muscle.⁵ Estrogen also sensitise myocardium to catecholamines by increasing number of adrenergic receptors. Peripartum use of

tocolytics and oxytocics can trigger tachyarrhythmias. First manifestation may occur in perioperative period especially under anaesthesia as various anaesthetic drugs change physiology of AV conduction and autonomic tone. Unmasking of WPW pattern on ECG under anaesthesia has been described several times⁴. First manifestation may be sudden cardiac death probably due to ventricular tachycardia or fibrillation. Underlying organic heart lesion may trigger tachyarrhythmias. Our patient also had AML prolapse.

Anaesthetic goal is to avoid increase in sympathetic activity as pain, anxiety, stress response of intubation, lighter planes of anaesthesia and hypovolemia. Antiarrhythmic medication should be continued till surgery. Various anaesthetic techniques have been described depending on nature of surgery including general anaesthesia, epidural anaesthesia, combined spinal epidural, spinal with or without opioids. Regional is preferred over general anaesthesia to avoid polypharmacy and noxious stimuli of laryngoscopy and intubation.^{6,7,8} Epidural anaesthesia with segmental blockade has advantage of better hemodynamic stability and good postoperative analgesia over spinal. We used subarachnoid block using bupivacaine and low dose fentanyl considering rapid and reliable action of spinal, short duration of procedure in seniors hand, our more experience with spinal over epidural in parturients and our patient was asymptomatic after RF ablation. Hypotension following spinal is issue but can be managed safely with proper treatment.

Reduced atrial filling after spinal anaesthesia and vasopressor used to treat hypotension both can trigger arrhythmia. Adequate preloading will avoid both. Avoidance of aortocaval compression is must. If hypotension occurs, phenylephrine is drug of choice as it increases the vagal tone indirectly stimulating baroreceptor reflexes. It has been used successfully to terminate SVT in a patient with WPW syndrome⁹. Ephedrine has induced SVT during caesarean section and should be avoided¹⁰. Oxytocin use during labor or caesarean may trigger SVT. Recommendation is 5 units maximum as bolus otherwise administer slowly or in iv infusion especially in presence of cardiovascular compromise¹⁰. We used 5 units in iv infusion with brief episode of sinus tachycardia. If general anaesthesia is used drugs like atropine, glycopyrrolate or ketamine should be avoided. Thiopentone sodium is safe but propofol is choice as correction of delta wave on ECG with propofol is described¹¹. Also it does not affect refractory period of accessory pathway so also midazolam and fentanyl. Isoflurane and sevoflurane have no effect on AV conduction, hence can be used. Cardistable vecuronium and rocuronium are preferred over pancuronium. Cis-atracurium with high autonomic safety ratio and absence of histamine release would be better choice. Mivacurium if available is choice as reversal with neostigmine and anticholinergic is avoided. Neostigmine caused rapid AF with wide QRS complexes in intermittent WPW syndrome. In hemodynamically stable patients normal doses of neostigmine and glycopyrrolate can be used⁴.

During pregnancy both mother and foetus are at risk. All drugs used to treat arrhythmias cross placenta but have been associated with low risk. If orthodromic AVRT occurs, carotid sinus massage on right side followed by left side should be tried. Never massage both sides simultaneously. If no response adenosine 6 mg over 1 to 2 second is given and can be repeated 12 mg after 1 to 2 minutes. Dose more than this is usually not required during pregnancy due to decreased levels of adenosine deaminase. Adenosine is naturally occurring purine nucleoside with half life of < 10 seconds making it ideally suitable for pregnancy. Transient foetal bradycardia is described and foetal heart should be monitored. Diltiazem 15 mg iv can be used as alternative. If antidromic AVRT occurs drugs blocking conduction in bypass tract like procainamide, lignocaine, ibutilide, quinidine, flecanide can be used. If atrial fibrillation occurs digoxin and verapamil are contraindicated due to risk of ventricular fibrillation. Amiodarone is best avoided during pregnancy because of its teratogenic potential. If pharmacological treatment is not effective or patient becomes hemodynamically unstable, synchronised electrical cardioversion is essential. Though direct current cardioversion has been used at all stages of pregnancy without significant complications, foetal arrhythmias can occur¹². Monitoring of foetal heart with preparation for emergency caesarean is advised. During pregnancy, SVT refractory to pharmacological treatment and DC shock is described for which emergency caesarean was carried out which normalised the rhythm¹³.

Anaesthesiologist must be prepared to deal such event. Treatment of WPW syndrome is RF ablation of accessory pathway as done in our case. Though RF ablation is widely used and is effective treatment, success rate varies from 85% -95%¹⁵. 10% patients had return of accessory conduction and 2% had recurrence of AVRT within 3-22 months follow up study after RF ablation¹⁴. In other study,9% patient had recurrence of pre-excitation or AVRT and underwent second successful ablation. Cause for failure could be presence of more than one accessory pathway. Our patient also had recurrence of AVRT within 4 weeks of first RF ablation. This indicates need for careful evaluation and management even in post ablation patients as unmasking of WPW pattern can still occur under anaesthesia. To summarise, WPW syndrome is associated with small but lifetime risk of catastrophic events and/or sudden cardiac death attributable to malignant arrhythmias especially in perioperative period. During pregnancy AVRT may be triggered, both mother and foetus are at risk. Regional anaesthesia is preferred over general anaesthesia Antiarrhythmic drugs and defibrillator must be ready. Vigilant monitoring and prompt treatment is essential

Reference

1. Rosner M.H., Brady W.J., Kefer M.P.,Martin M.L. :Electrocardiography in patient with WPW syndrome :diagnostic and initial therapeutic issues. Am J Emerg Med 1999; 17:705-14.

2. Hines R L , Marschall K E : Stoelting's Anaesthesia and Co-Existing Diseases Fifth edition, page 72
3. Calkin H. Catheter ablation for cardiac arrhythmias .Sci Am Med 1999, 1-6.
4. Chhabra A., Trikha A., Sharma N. Unmasking of benign WPW syndrome under general anaesthesia. Indian J Anaesthesia 2003;47: 208-11.
5. Widerhorn J . WPW syndrome in pregnancy : Increased incidence of supraventricular arrhythmias. Am Heart J.1992; 123: 796-8
- 6.Rahul S., R.D.Patel, Dewoolkar. Anaesthetic management of WPW syndrome .Internet J Anaesthesiology ;2007;11:2
7. Asaf Nazir Shora, Showkat Gorkoo .Anaesthetic management of WPW syndrome for caesarean section; Internet journal Anaesthesiology ,2008:16:2.
8. Savitri K. ,Safiya sheikh , Bhavya P. Anaesthetic management of a case of WPW syndrome. Indian J Anaesthesia 2011, 55 (1); 381-383
9. Jacobson L. , Turnquist K.,Masleys S. WPW syndrome: termination of paroxysmal supraventricular tachycardia with phenylephrine. Anaesthesia 1985;40:657-60
10. Robbins K.,Lyons G. Supraventricular tachycardia in pregnancy.Case Reports. British J Anaesthesia 2004 ;92:140-43.
- 11.Seki S., Ichimiya T. A case of normalisation of WPW syndrome conduction during propofol anaesthesia. Anaesthesiology.1999; 90:1779-81.

12. C.H.N. Tromp. Electrical cardioversion during pregnancy safe or not ?. Neth Heart J 2011; 19 (3): 134-36.
13. Kyoung Ok Kim, Gun-Jung, Chang . Emergency caesarean delivery in a parturient who had an intractable paroxysmal SVT. Korean J Anesth.2012;63(4);360-62.
14. Shih Ann Chen ,Wing Ping Tsang .Radiofrequency ablation for treatment of WPW syndrome ,short and long term follow up. International J Cardiology 1992 , 37(2);199-207.
- 15 . R.K.Thakur et al. Radiofrequency ablation in WPW syndrome. Canadian Med Asso J ,1994 ,151(6);771-76