WPW SYNDROME-A Case Report

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Abstract:
WPW syndrome is Wolff Parkinson's White Syndrome, a type of pre-excitation syndrome caused by the accessory pathway joining atria and ventricle other than the normal atrio-ventricular pathway. It is characterized by the presence of short P-R interval and Delta waves in QRS complex with widening of QRS complex in ECG. Preoperatively, there is no way to determine the presence of accessory AV conduction pathway in the presence of normal ECG tracing. Managing the case through preoperative history and clinical evaluation is very important. If the patient has been asymptomatic, then chances of life threatening arrhythmias are less but if patient is symptomatic then chances of arrhythmias especially under anaesthesia are highly increased. The facts of unmasking of WPW syndrome under anaesthesia has been mentioned in the literatures. Anesthetic drugs tend to change the physiology of the atrio-ventricular conduction. We report a known case of WPW syndrome that was asymptomatic preoperatively except for an abnormal ECG with delta wave, posted for Hemi thyroidectomy. These patients are very prone for arrhythmias especially PSVT. Even asymptomatic patients can develop arrhythmias, at any time during surgery so meticulous monitoring should be done in the perioperative period.

Keyword: WPW syndrome, Thyroidectomy, ECG, PSVT, General anaesthesia, Regional anaesthesia, Atrial fibrillation

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Introduction
WPW syndrome is Wolff Parkinson’s White Syndrome, a type of pre-excitation syndrome caused by the accessory pathway joining atria and ventricle other than the normal atrio-ventricular pathway. It is characterized by the presence of short P-R interval and Delta waves in QRS complex with widening of QRS complex in ECG. Patients may be asymptomatic or present with a history of arrhythmias prior to surgery and may be on antiarrhythmic drugs. We report a known case of...
WPW syndrome that was asymptomatic preoperatively except for an abnormal ECG with delta wave, posted for Hemi thyroidectomy.

Case Report
A female patient aged 38 yrs was admitted as a case of Solitary Nodule Thyroid. Patient gives history of having diagnosed as a case of WPW syndrome 3yrs ago while on a routine ECG check-up. Patient was asymptomatic except for generalized chest pain on and off, not related to exertion. She gives no history of breathlessness, syncope or palpitation. Effort tolerance was good and no relevant past medical or surgical history.

On examination, patient was moderately built weighing 55 kg. Pulse-88/min, regular, normal volume, and no radiofemoral delay. BP-110/70 mm Hg. Examination of CVS, RS, Abdomen and CNS were found to be normal. Airway examination was normal. Patient’s Hb was 11.2 mg/dl. Renal parameters were normal. ECG revealed short PR interval, slurred upstroke in QRS complex (Delta wave), T wave inversion in leads II, III and aVF, Rate 80/min, regular. Cardiological evaluation done and confirmed as WPW syndrome. 2D Echo showed no structural abnormality and EF was 65%. Cardiologist advised T.Atenolol 25 mg od’

High risk consent obtained and taken for surgery under ASA III. General anaesthesia was planned for her.

Preoperative preparation
Emergency Drugs-Esmolol, Adenosine, Amiodarone, Lignocaine were kept ready.
Defibrillator checked and kept ready.

Planned to avoid sympathetic response during induction, intubation and throughout intra-op period with deep plane anaesthesia and good analgesia.

Intraoperative management
IV access done and premedication with Tab Diazepam10mg in the ward. Sedation was given with Inj. Midazolam 2 mg IV and inj. Fentanyl 150 µg IV for analgesia. Preoxygenation with 100% O2 was done for five minutes. Induction was done with Inj. Propofol 100mg and Inj. Vecuronium 6mg intravenously, and Sevoflurane 3% in 100 % O2. Intubation was done with a 7.5 size Portex cuffed endotracheal tube in deep plane. Intubation response was very minimal. Patient was maintained with O2 : N2O (33%:67%) with Sevoflurane 2%. The patient was in supine position. Intraoperative vitals were monitored and maintained within normal limits. Blood pressure was maintained around 110-120 mm hg systolic and 70-80 mm Hg diastolic, Spo2-100%. Blood loss- 200 ml and patient was given 1500 ml of crystalloids. Intra-operative period was uneventful. Duration of surgery was 90 minutes. Patient Reversed with Inj Neostigmine 2.5 mg and Inj Glycopyrrrolate 0.4 mg. Exubation was done after 90 seconds of giving Inj Lignocaine 1.5mg/ kg i.v. Patient was shifted to PACU for observation. No new changes was seen in post op 12 lead ECG.

Discussion
WPW syndrome is Wolff Parkinson’s White Syndrome, a type of preexcitation syndrome caused by the accessory pathway joining atria and ventricle other than the normal atrio-ventricular pathway. It is characterized by the presence of short P-R interval and Delta waves in QRS complex with widening of QRS complex in ECG. Normal PR interval is 0.12-0.20 sec and QRS complex-<120ms.
There are two types. Type A ST-T changes in anterior chest leads. Type B ST-T changes in inferior leads. Common ECG abnormalities of the usual form of WPW syndrome include:

1. A short PR interval
2. A wide QRS complex – QRS complex duration > 120 ms with a slurred, slowly rising onset of the QRS in some leads (Delta wave) and usually a normal terminal QRS portion

The two most common types of arrhythmia in the WPW syndrome are:

1. Atrio-ventricular reentrant tachycardia and
2. Atrial fibrillation.

Patients with the WPW syndrome can have intermittent pre-excitation with variable ECG patterns. Conduction by way of an accessory pathway frequently occurs in a retrograde fashion, from ventricles to atria, and the pathway can thus be concealed and the electrocardiogram may appear normal.

Preoperatively, there is no way to determine the presence of accessory AV conduction pathway in the presence of normal ECG tracing. Managing the case through preoperative history and clinical evaluation is very important. If the patient has been asymptomatic, then chances of life threatening arrhythmias are less but if patient is symptomatic then chances of arrhythmias especially under anaesthesia are highly increased. The facts of unmasking of WPW syndrome under anaesthesia has been mentioned in the literatures. Anesthetic drugs tend to change the physiology of the atrio-ventricular conduction. Regional anaesthesia is having advantage over general anaesthesia wherever it is feasible, due to avoidance of multiple drugs, noxious stimuli of laryngoscopy, but hemodynamic stability is worrisome problem. Epidural anaesthesia is preferred to spinal due to controlled and segmental block with better hemodynamic stability. The chances of arrhythmias are increased in general anaesthesia because of stimulation during laryngoscopy or pain in lighter plane of anaesthesia, but hemodynamic stability is better with general anaesthesia. Propofol has no effect on the refractory period of accessory pathway. So it is a preferred induction agent and so is Thiopental. The same is true with Benzodiazepines. N₂O can be used safely. Many anaesthetic agents can precipitate conduction via pre-existing accessory pathway leading to unmasking of WPW pattern. Sevoflurane and Isoflurane have no effect and are preferred to Halothane. Isoflurane is the agent of choice, because it suppresses the accessory pathway. Atropine, Glycopyrrolate, and Ketamine precipitate tachycardia resulting in PSVT or Atrial fibrillation. Fentanyl in dosage between 3-5 µg/kg when used has shown excellent effect. Fentanyl is associated with adequate hemodynamic stability and bradycardia which helps in the management.

Rocuronium and Vecuronium are cardio stable and are preferable to Pancuronium which causes tachycardia. Atracurium causes histamine release with less autonomic safety. Newer relaxants like Cis-astracurium and Mivacurium can be safe because reversal with Neostigmine and Glycopyrrolate is not required. Avoidance of Neostigmine has been recommended in patients with WPW syndrome. So for this reason Cis-astracurium is preferred.

The treatment of choice for WPW syndrome is Radiofrequency ablation. Pacemakers has very little role in WPW syndrome. It can be used in atrioventricular non reentrant tachycardia and vasovagal syndrome not responding to medical treatment.

**Summary**
In the absence of a previous electrocardiogram, the diagnosis of W-P-W syndrome cannot usually be made. There is a tendency to paroxysmal supraventricular tachycardia and there may be associated congenital cardiac abnormality. Anaesthetic drugs tend to change the physiology of the atrio-ventricular conduction. Regional anaesthesia is preferable wherever it is feasible. If general anaesthesia is required, Propofol, Fentanyl, Isoflurane, Sevoflurane, N₂O, Benzodiazepines can be used safely. Antiarrhythmic drugs and defibrillator must be kept ready. Never use Digitalis and Verapamil. Even asymptomatic patients can develop arrhythmias, at any time during surgery so meticulous monitoring should be done in the perioperative period.

References


2 Repeated SVT in asymptomatic patients with WPW syndrome during casarean delivery. CJA 2003-50;752-53.

3 Sharpe MD, Dobkowski WB, Murkin JM, Klein G, Yee R: Propofol has no direct effect on sinoatrial node function or on normal atrioventricular and accessory pathway conduction in Wolff-Parkinson-White syndrome during alfentanil/midazolam anaesthesia. Anesthesiology 1995; 82:888-95.
