International Journal of Gynaecology and Obstetrics Research
www.gynaecologyjournal.in
E-ISSN: 2663-3612, P-ISSN: 2663-3604
Received: 05-07-2020; Accepted: 20-07-2020; Published: 06-08-2020
Volume 2; Issue 2; 2020; Page No. 01-03

A rare case of wolff Parkinson white syndrome in pregnancy and its outcome

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Abstract
WPW syndrome is a type of ventricular pre-excitation with the presence of accessory pathway which connects atria and ventricle.It is characterized by delta wave,wide QRS, short PR interval.It was described for the first time by Louis Wolff,Sir John Parkinson and Paul Dudley white in 1930.The most common arrhythmia seen in pregnancy is paroxysmal supraventricular tachycardia and WPW syndrome accounts for majority of this with incidence of 1.2per 1000 people.
We are presenting a case of 30yr old G2P1L1 with 39wks of POG with prev LSCS with hypothyroidism with history of WPW SYNDROME diagnosed 2 years ago and treated with Electrophysiological study and radiofrequency ablation.
Patient presented to us with regular antenatal checkups and was followed upto term and she was asymptomatic (post radio frequency ablation status) throughout the pregnancy, cardiology opinion and pre anaesthetic evaluation done. The mother delivered by LSCS under Spinal anesthesia. Both mother and baby were stable and healthy. She was asymptomatic in her postpartum period and discharged on post natal day 7.

Keywords: WPW syndrome, Pre-excitation,Paroxysmal supraventricular tachycardia, Radiofrequency ablation, Pregnancy, LSCS, Spinal anesthesia

Introduction
Cardiac arrhythmias are the most common cardiac complications occurring in pregnancy [5] Supraventricular tachycardia is the most common type presenting in pregnancy mediated by an accessory pathway. WPW syndrome characterized by accessory pathway is uncommon condition in pregnancy with an incidence of 1.2/1000 people [1]. It is common in younger age group without any underlying structural heart disease [7]. If the condition is not recognized and treated properly, it can lead to life threatening cardiac arrhythmia and sudden death in pregnancy. Understanding the impact of treatment on the fetus is a challenge in obstetrics apart from maintaining good maternal condition. During organogenesis, anti-arrhythmic agent should be taken with caution as it may have an effect on the fetus [8].

Case Report
A 30 years old G2P1L1 with previous LSCS with hypothyroidism with known WPW syndrome diagnosed 2 years back was regularly followed up. On examination her vitals were stable.
Her first pregnancy was uneventful and she underwent cesarean section 5years ago.
Patient was evaluated for palpitations and syncopal attacks with ECG and 2D ECHO. ECG showed narrow QRS regular short PR interval, preexcitation pattern suggestive of right sided pathway. 2D ECHO and color Doppler study was normal. Patient was diagnosed to have WPW syndrome for which she underwent electrophysiological study and radiofrequency ablation, post procedure stay was uneventful.
Elective caesarean section was done under spinal anaesthesia after cardiologist opinion. Patient delivered a healthy baby. Intraoperative and postoperative period was uneventful. Patient was stable and fit for discharge on postnatal day 7 after suture removal.

Discussion
WPW syndrome is congenital abnormality due to an accessory atrio-ventricular pathway. It was first described by Louis Wolf, Sir John Parkinson and Paul Dudley White in 1930. The precisemechanism of increased arrhythmia during pregnancy is not known, but hemodynamic, hormonal and autonomic changes are involved in the pathogenesis. The increase in plasma volume causes stretching of atrial and ventricular myocytes and results in early after depolarizations, shortened refractoriness, slowed conduction and spatial dispersion through activation of stretch activated ion channels. The increase in heart rate during pregnancy,seen predominantly in the third trimester, may also

predispose to arrhythmia. Estradiol and progesterone have been shown to be proarrhythmic and estrogen increases adrenergic receptors in myocardium, hence adrenergic response is increased in pregnancy [3].

Supraventricular tachycardia [SVT] is defined narrow complex tachycardia > 120 bpm. But heart rate can riseupto 180-240bpm in SVT and it is difficult to differentiate between sinus tachycardia and supraventricular tachycardia. In pregnancy, sinus tachycardia causes decrease in PR, QT and QRS intervals. Gravid uterus produces left axis shift in ECG. In WPW syndrome, the common ECG findings are short PR interval[<120msn], wide QRS complex[>120msn] and delta wave[slurred upstroke of QRS]. Treatment is not required in the asymptomatic patients. The most Commonest form of SVT is benign and it will managed with vagal stimulation and valsalva manoevre [4]. But occurrence of atrial fibrillation in pregnant WPW syndrome patients can cause sudden death. Normally in patients with atrial fibrillation the ventricles are protected from conduction of rapid atrial impulses by gating effect of AV node.

In patients with WPW syndrome this protection is lost due to rapid conduction of implulses from atrium to ventricle through an accessory pathway and result in ventricular tachycardia and sudden death.

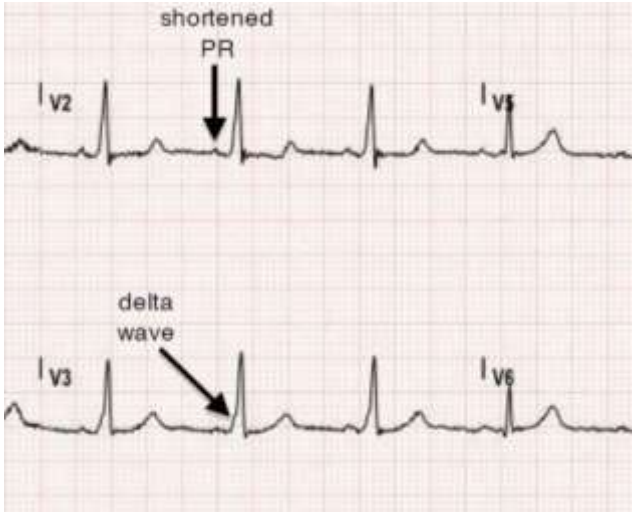

Fig 1

Antiarrhythmic drugs should be used with precautions during pregnancy as most of these drugs cross the placenta and excreted in breast milk and have effect on fetus.

In Acute SVT adenosine, calcium channel blocker [verapamil] and beta blockers can be used. Adenosine and verapamil are found to be safe and effective in pregnancy. Adenosine is first choice of drugs for treatment of SVT. It is purine nucleotide, transiently depresses sinus node activity and slows atrioventricular conduction. It is rapidly acting drug and half-life is less than 10sec. During adenosine infusion, fetal heart rate must be monitored to avoid transient fetal bradycardia.[4]Digoxin is safe during pregnancy but contraindicated in WPW syndrome as it increases the refractory period in the AV node and hence increases conduction through accessory pathway at faster rate.Verapamil is also contraindicated in WPW syndrome due to acceleration of conduction through the accessory pathway. Adenosineis used as first choice in the treatment of such patients. Sotalol is used to manage SVT in WPW patients during pregnancy, because of no teratogenicity. Flecainide is used to manage atrial fibrillation and SVT in WPW patients, as it has no teratogenic effects, it is secreted in breast milk but its safety not well established. Amidarone is best avoided due to potential teratogenic effects and fetal toxicity like fetal hypothyroidism and hyperthyroidism, growth retardation, prematurity [6].Concomitant asthma is a contraindication for Adenosine and beta blocker [2]. Syncronised electrical cardioversion is safe and a reasonable option for arrhythmias in hemodynamically unstable condition, it is neccessory for severe cases of SVT resistant to drug therapy.Direct electrical current shock delivered to myometrium and cardioversion does not compromise blood flow to the fetus[7] but fetal monitoring is advisable due to risk of fetal bradycardia. Refractory arrhythmias not controlled by drugs or Dc conversion had a rescue radiofrequency ablation with excellent results. It is the definitive treatment of WPW syndrome.

Table 1: WPW Syndrome

Patient presentation	Choice of treatment
1.Asymptomatic patients	No treatment is required,follow up
2.tachyarrhythmias	
*Atrial fibrillation:-unstable patient	Cardioversion
-stable patients-acute -chronic	-cardioversion,flecainide,sotalol -sotalol[rate control]
*Sinus tachycardia	Rate control if symptomatic
*Paroxysmal SV;-stable	Carotid sinus massage ⇩ Adenosine ⇩ Flecainide ⇩ Cardioversion
unstable	Cardioversion

Conclusion

In pregnant women with WPW syndrome, early recognition of symptoms, specific diagnosis and multidisciplinary management with obstetric, cardiology, anesthetic and critical care can manage it safely. In general acute therapy of supraventricular tachyarrhythmia during pregnancy is similar to that of non-pregnant patient, but special consideration should be given to teratogenic effects on the fetus. With an appropriate management, meticulous monitoring, most pregnant women will have a normal and uneventful pregnancy.

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