DÜZCE TIP DERGİSİ
DUZCE MEDICAL JOURNAL

OLGU SUNUMU / CASE REPORT

[1] İsmail Aydın ERDEN

[1] Banu AYHAN

[2] İlker Öngüç AYCAN

[1] Özgür CANBAY

[1] Ülkü AYPAR

[1] Hacettepe Üniversitesi Tıp Fakültesi, Anesteziyoloji ve Reanimasyon AD, Ankara, Türkiye.

[2] Dicle Üniversitesi Tıp Fakültesi, Anesteziyoloji ve Reanimasyon AD, Diyarbakır, Türkiye.

Submitted/Başvuru tarihi: 08.04.2010
Accepted/Kabul tarihi: 09.03.2012
Registration/Kayıt no: 10 04 116

Corresponding Address /Yazışma Adresi:

Dr. İlker Öngüç AYCAN

Dicle Üniversitesi Tıp Fakültesi, Anesteziyoloji ve Reanimasyon AD, Diyarbakır Türkiye.
e-posta: ilkeraycan@gmail.com

e-ISSN 1307- 671X
www.tipdergi.duzce.edu.tr
duzcetipdergisi@duzce.edu.tr

Cesarean Section In a Patient With Wolff-Parkinson-White Syndrome Under Spinal Anesthesia

Spinal Anestezi Altında Wolff-Parkinson-White Sendromlu Hastada Sezeryan Ameliyatı

ABSTRACT
Maternal arrhythmias during pregnancy may be life-threatening. Several studies demonstrate that pregnancy predisposes maternal arrhythmias in asymptomatic patients with Wolff-Parkinson-White syndrome. The presence of an accessory pathway may responsible for Wolff-Parkinson-White syndrome. Regional anesthesia induced sympathetic blockade causes a prompt decrease in atrial filling pressure and this process results in increased disrhythmia. Autonomic, hemodynamic and hormonal changes may predispose to arrhythmias in pregnancy. Hormonal changes especially abrupt changes in serum levels of estrogens are thought to be responsible in the development of arrhythmias during pregnancy. This case report describes a pregnant woman with Wolff-Parkinson-White syndrome under spinal anesthesia for cesarean delivery surgery.
Key words: Anesthesia, Spinal; Wolff-Parkinson-White Syndrome

ÖZET
Gebelikte olan maternal aritmiler yaşamı tehdit edebilmektedir. Bir çok çalışmada, Wolff-Parkinson-White sendromlu asemptomatik hastalarda gebeliğin maternal aritmilere yatkınlığı arttırdığı bildirilmiştir. Wolff-Parkinson-White sendromundan aksesuar yolların var oluşu sorumlu olabilir. Rejional anestezi sırasındaki sempatik blokaj atrial dolum basıncında hızlı azalmaya ve bu da artan disritmilere neden olur. Gebelerdeki otonomik, hemodinamik ve hormonal değişiklikler aritmiye yol açabilir. Hormonal değişiklikler, özellikle östrojenin serum seviyesindeki ani değişikliklerin gebelik sırasındaki aritmilerin gelişmesinden sorumlu olabileceği düşünülmektedir. Bu olgu sunumunda Wolff-Parkinson-White sendromlu gebe bir bayanda spinal anestezi altında sezeryan ameliyatını tartıştık.
Anahtar Kelimeler: Anestezi, Spinal; Wolff-Parkinson-White Sendromu.

INTRODUCTION
Several reports have indicated that pregnancy predisposes asymptomatic patients with Wolff-Parkinson-White (WPW) syndrome (1). The presence of an accessory pathway may responsible for WPW syndrome in patients. Circus movement tachycardia and atrial fibrillation may occur. Once an arrhythmia occurs high ventricular rates depending on the characteristics of the accessory pathway follow. Ventricular fibrillation (VF) may occur during high ventricular rates. WPW syndromes related with a low risk of sudden death and a good prognosis in asymptomatic patients (2,3). Here we report a 32-yr-old woman with WPW syndrome during spinal anaesthesia for Cesarean delivery (C/D).

CASE REPORT
A 32-year-old woman of 35 weeks' gestation (166 cm in height and 82 kg in weight) with WPW syndrome required caesarean section (C/D) under spinal anesthesia. She has been complaint with occasionally chest pain and tachycardia. She was diagnosed as asthma and WPW syndrome preoperatively. She has been taking 150 mg propafenone (rytmonorm®) per orally twice a day for atrial fibrillation. The results of preoperative examinations were normal, except for the findings of the sinus tachycardia (105 beat.min-1) with preexitation, inferolateral delta wave, shortening of PR and QR intervals on a 12-lead electrocardiogram (ECG). Premedication was not given. Preoperative 1000 ml ringer laktat (RL) was administered. Systolic blood pressure, diastolic blood pressure and heart rate on arrival at the operating room were 125 mmHg, 75 mmHg and 108 beat.min-1, respectively. Spinal anaesthesia was applied uneventfully and 7,5 mg of 0.5% levobupivacaine and 10 µg fentanyl was injected at the level of L3-4 interspace and sensory analgesia reached the T4 level. Systolic blood pressure fall down 80 mmHg about

10 minutes later after anaesthesia and we applied 5 mg ephedrine intravenously (iv). Following ephedrine administration, we saw long QRS interval after than 3 ventricular arrhythmia occurred. We applied 1 mg midazolam iv. The baby was born uneventfully and oxytocin and midazolom 1mg iv. repeated. Blood loss was approximately 650 ml. When the operation was finished she was transferred to gynecology and obstetric units. She had no further complications in the postoperative period.

DISCUSSION

Maternal arrhythmias during pregnancy may be life-threatining both for the mother and fetus. The incidence of WPW syndrome has been reported to be 0.1 and 2.5 per 10002 in asymptomatic person. Incidences of supraventricular arrhythmias are increased during pregnancy with WPW. The suspected triggering factors are pregnancy related increases in plasma volume, hypovolaemia resulted from peripartum hemorrhage or prolonged labour, increased sensitivity to adrenergic stimuli by oestrogens, stress and anxiety (4).

Unknown WPW syndrome only with a retrograde, but not an anterograde-conducting accessory pathway, related with as many as 30% of cases of accessory pathway. Unknown WPW syndrome is concealed because it has a different course from classical WPW syndrome. A lot of studies have been conducted to patients with known WPW syndrome during anaesthesia. Incidence of tachyarrhythmia connected with anaesthesia is as high as 28% (5). Sympathetic blockade due to regional anaesthesia causes a prompt decrease in atrial filling pressure and this process results in increased disrhythmia (4). There is limited experience of control of SVT during regional anaesthesia. In this case we experienced a hypotensive period and ventricular arrythmia following spinal anaesthesia like other previously reported cases (2,4).

It is well known that autonomic, hemodynamic and hormonal changes may predispose to arrhythmias in pregnancy; however treatment should be planned for those with haemodynamic outcomes. A multitude of vasoactive agents has been used for the acute management of SVT in WPW in pregnancy. The optimal agent choice depends on both patients clinical course and anaesthetic choice which will be used for labour. In the past few decades pharmacological treatment choices include digoxin, α-agonists (methoxamine and phenylephrine), β-antagonists (propranolol and more recently esmolol), cholinomimetic agents (neostigmine), calcium channel blockers (verapamil), and the rapid-acting vasodilator adenosine (6,7).

Hormonal changes especially abrupt changes in serum levels of estrogens are thought to responsible in the development of arrhythmias during pregnancy. Although the blood levels and the metabolism of catecholamines do not change significantly during pregnancy (8). Estrogens increase the excitability of uterine muscle fiber. However, some authors have concluded that estrogens increase both the number of α-adrenergic receptors and adrenergic sensitivity in susceptible tissues (myometrium, platelet) (9,10). Additionaly j adrenergic receptors in hypothalamus are increased. Therefore someone can postulate that the increased adrenergic sensitivity of hormone receptors and increased number of neurotransmitters in various tissues may potentially play a role in the genesis of arrhythmias by changing the refractory periods and conduction velocity in the reentrant circuit (11). These changes lead to various degrees of stress and anxiety which can result in arrhythmogenic effects due to stimulated sympathetic nervous system (12).

In conclusion, in the pregnant population mostly due to hormonal and other either phsylogical or non phsylogical factors it seems that there is an increased possibility for supraventricular tachyarrhythmias. Therefore there is an increasing need for further prospective randomized studies clearly document this increased arrhythmia susceptibility during pregnancy and the preferred therapeutic strategies in these patients.

REFERENCES

1. Okamoto T, Minami K, Shiraishi M, Ogata J, Shigematsu A. Repeated supraventricular tachycardia in an asymptomatic patient with Wolff-Parkinson-White syndrome during Cesarean delivery. Canadian Journal of Anesthesia. 2003, 50(7):752-3.
2. Gunusen I, Karaman S, Toz Z, Aliyeva A, Firat V: Suddenly developed atrial fibrillation during caesarean section. Wolff-parkinson-white syndrome. Turkiye Klinikleri J Anest Reanim. 2007, 5(3):158-160.
3. Timmermans C, Smeets JL, Rodriguez LM, Vrouchos G, van den Dool A, Wellens HJ. Aborted sudden death in the Wolff-parkinson-white syndrome. The American Journal of Cardiology. 1995, 76(7):492-4.
4. Zijl DHSV, Dyer RA, Millar RNS, James MFM. Supraventricular tachycardia during spinal anaesthesia for caesarean section. International Journal of Obstetric Anesthesia. 2001, 10(3):202–205.
5. Nishikawa K, Mizoguchi M, Yukioka H, Asada A, Fujimori M. Concealed Wolff-parkinson-white syndrome detected during spinal anaesthesia. Anaesthesia. 1993, 20; 48(12): 1061-64.
6. Sprague DH, Mandel SD. Paroxysmal supraventricular tachycardia during anesthesia. Anesthesiology. 1977, 46(1):75–77.
7. Chow T, Galvin J, McGovern B. Antiarrhythmic drug therapy in pregnancy and lactation. Am J Cardiol. 1998, 82(4A): 581–621.
8. Gleicher N, Meller J, Sandler RZ, Sullum S. Wolff-Parkinson-White syndrome in pregnancy. Obstet Gynecol. 1961, 58:748-52.
9. Roberts JM, Insel PA, Goldfien A. Regulation of myometrial adrenoreceptors and adrenergic response by sex steroids. Molecular Pharmacology. 1981, 20(1):52-8.
10. Metz A, Stump K, Cowen PJ, Elliott JM, Gelder MG, Grahame-Smith DG. Changes in platelet alpha-2-adrenoreceptor binding postpartum: possible relation to maternity blues. Lancet. 1983, 5;1(8323)1:495-8.
11. Schwartz PJ, Priori SG. Sympathetic nervous system and cardiac arrhythmias. In: Zipes PD, Jalife J (eds): Cardiac electrophysiology: From cell to bedside. 1 st ed. Philadelphia: WE Saunders Co, pp.330-43, 1990.
12. Hensleigh PA, Brown EL. Psychosocial stress and pregnancy. In: Gleicher N (ed). Principle of medical therapy in pregnancy. 1 st ed. New York: Plenum Medical Book Company, pp.885-8, 1985.