

## Correlation between the warfarin dose and maternal and fetal outcomes in pregnant women with prosthetic heart valves

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**Aim:** To determine the correlation between the warfarin dose and maternal and fetal outcomes in pregnant women with prosthetic heart valves who followed a local anticoagulation protocol. These patients received obstetric care at the Steve Biko Academic hospital, a tertiary referral hospital in Pretoria, South Africa, from January 2005 to August 2009.

**Methods:** A retrospective observational study of pregnancy outcome in women with mechanical heart valves who received the following anticoagulation protocol: Unfractionated subcutaneous heparin (UFH) twice daily that was titrated to a therapeutic partial thromboplastin time (PTT), given when possible from pregnancy detection until 12 weeks gestation followed by warfarin from weeks 12-35 (target INR of 2.5 - 3.5) then UFH until elective caesarean section (CS) at 38 weeks with the morning dose of UFH withheld pre-operatively.

**Results:** Sixty-two pregnancies were managed during the study period. Fifty-one women had mitral valve prostheses, 2 had aortic and 9 patients had double valve prostheses. The mean gestational age at booking was 16 weeks. Forty-one women booked after the first trimester and were exposed to warfarin during the teratogenic period. Fifteen patients resided in Pretoria, 13 patients were referred from outside Pretoria but within the Gauteng Province and 34 patients were from other provinces.

**Fetal outcome:** There were 5 cases of warfarin embryopathy. In 2 of these cases maternal warfarin use was 5mg or less in the first trimester. In the remainder of the pregnancies, fetal outcome was analysed in 3 groups depending on the maternal dose of warfarin. In group 1(n=26) the maternal warfarin dose was 5mg or less; group 2(n=20) - 5.1mg-7.4mg and 7.5mg or more in group 3 (n=11). The live birth rate was 64%, 60% and 45% respectively in each group. There was no difference in birth weight between the 3 groups. There were 8 (35%) miscarriages in group 1, 5 (25%) in group 2 and 1 (9%) miscarriage in group 3. The stillbirth rate in each group was 3.8%, 15% and 36% respectively (p = 0.012).

**Maternal outcome:** There were no maternal deaths or cases of valve thrombosis. There were 6 (9.7%) near misses. Four mothers developed cardiac failure and were treated medically. There were 2 cases of bleeding problems post-caesarean section requiring massive blood transfusions and re-look laparotomies.

**Conclusion:** In this study warfarin in pregnancy is associated with a low risk of valve thrombosis or maternal death. Fetal outcome is dependant on the maternal warfarin dose. However if pregnancy continues past 25 weeks the risk of stillbirth is significantly lower if the warfarin dose is 5mg compared to higher doses.