ANTI-COAGULANT THERAPY IN PROSTHETIC HEART VALVES DURING PREGNANCY

by

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The frequency with which artificial heart valves are being used in the management of valvular heart disease means that there is a growing population of women of child bearing age who have had valve replacements. These women need to know the risks of pregnancy and the chances of having a healthy baby but obstetricians and cardiologists cannot yet advise them honestly because of paucity of individual experience. During the past quarter century approximately 100 cases of pregnancies in women with cardiac valve prosthesis have been reported in the International Medical Literature.

When these women become pregnant electively inspite of the hazards being explained to them they give the obstetrician an opportunity to study the behaviour of these cases during pregnancy and puerperium and effects of anticoagulants on the baby and its development. It goes without saying that such cases when readmitted during pregnancy need reassessment of their cardiac status because of haemodynamic changes during pregnancy and also reevaluation of the anticoagulant therapy.

The present communication describes a case of pregnancy with mitral valve replacement with Starr Edwards valve, and explains the merits and demerits of various anti-coagulants regimens and emphasises the need to modify our approach of anti-coagulant therapy during pregnancy.

CASE REPORT

I.K., 20 years old female, primigravidae married for last 1½ years was admitted to the cardiotheracic department of Nehru Hospital attached to the Postgraduate Institute of Medical Education and Research, Chandigarh on 11-4-82 with a history of 37 weeks pregnancy. Mitral valve replacement with Starr Edwards valve was done 7 years back in this hospital. The operation and the postoperative period were uneventful. She was discharged on Tab. Sintrom 2 mg O.D. and monthly injections of Benzathine Penicillin. The patient was explained the risks of pregnancy and was forbidden to conceive while on anti-coagulants. The patient however, promptly became pregnant after her marriage and did not present herself again until she was 37 weeks pregnant, assuring herself of continuation of the pregnancy. She however, continued to take Tab. Sintrom 2 mg O.D.

No complication occurred during the pregnancy and her general and cardiac status remained stable during the whole period although she had no medical supervision.

On examination, she was found to be slightly

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anaemic. Blood pressure ranged between 140/90 to 150/100 mm of Hg. Cardiac status was good. Abdominal examination revealed mild intra-uterine growth retardation. Baby persisted as breech and foetal heart sounds were normally audible. In the cardio-thoracic unit, oral anti-coagulants were discontinued and she was stabilised on intravenous heparin 5,000 units 6 hourly and was transferred to obstetric unit on 16-4-1982. In view of pregnancy induced hypertension with breech presentation, pregnancy was terminated by elective caesarean section on 20-4-1982 (39 weeks period of gestation). Heparin was omitted 6 hours prior to surgery and was restarted 6 hours post-operatively. The new born was alive born female with apgar 8, 10 at 1 and 5 minutes respectively. Baby weighed 2.9 kg. No obvious congenital malformations were seen in the baby. Lactation was suppressed with Pyridoxine 200 mg. t.d.s. for 5 days as the patient had to be started on oral anti-coagulants. Tab. Sintrom was started on the 7th post-operative day and heparin was discontinued on the 9th post-operative day. The post-operative period was uneventful and she was discharged on the 13th post-operative day on Tab. Sintrom 2 mg O.D.

Discussion

Women with prosthetic heart valve replacement showed a slightly increased risk of developing complications. The reported problems are systemic thromboembolism, premature labour, cardiac failure, foetal and maternal morbidity. Of all, systemic thromboembolism is the most important. Pregnancy further increases the need for anti-coagulation therapy because of the well known changes in the coagulation factors.

Precisely, because of this knowledge the patient was advised to continue oral anti-coagulant throughout her life and to avoid pregnancy as the reports in the literature over the last ten years indicate foetal mortality of 15 to 30 per cent in women taking oral anti-coagulants (Villasanta, 1965; Fillmore and McDevitt, 1970; Hendnerson *et al*, 1972; Tejani, 1973 and Hall *et al*, 1980). Exposure to oral anti-coagulants during the 2nd and 3rd trimesters may be associated with an increased incidence of C.N.S. abnormalities secondary to intracranial bleeding resulting in mental retardation and/or blindness due to cataracts and optic atrophy (Hall, 1976). However, foetal damage or death unrelated to haemorrhage has also been reported by Disaia, 1966 and Kerber, 1968.

In a review of the haemorrhagic accidents which can arise with the use of oral anti-coagulants during the third trimester of pregnancy. Hirsch *et al* (1970) reported that the risks to the foetus was mainly related to trauma during child birth, which could be minimised if the oral anti-coagulants were withdrawn at 37 weeks of gestation. However, risks of premature labour and delivery are not predictable and in the premature infant who is under the influence of oral anti-coagulants, the risk of cerebral haemorrhage will be increased if labour sets in while the patient is on oral anti-coagulants.

Inspite of the risks explained, if the patient is adamant and wants pregnancy the ideal anti-coagulant should be one that does not cross the placenta, can be easily administered and whose effect can be easily reversed. No single anti-coagulant possesses all these qualities. The most common anti-coagulants used after valve replacement are the oral anti-coagulants belonging to the coumarin group. These oral anti-coagulants may be safe as far as the mother is concerned but these drugs present a definite hazard to the foetus as they readily cross the placenta.

Considering the risks involved with oral-anti-coagulants the present case was put on heparin parenterally. Although heparin does not cross the placenta and is

not teratogenic. Hall (1980), Stevenson *et al* (1981) suggests that the risk of foetal death, still birth and maternal haemorrhage are such that overall, the outcome of pregnancy may be only a little better than with oral anti-coagulants. Ueland (1981) reported the corrected pregnancy wastage as 14 per cent with hepatrin as compared to 17.2% with coumarin derivatives with an additional 10.8% risk of live born infants having problems. Heparin therapy thus appears to be twice as safe as compared with oral anti-coagulants. Oesteopenia is another undesirable side effect of long term heparin therapy administered by any route (Wise and Hall, 1980).

Recognising that no ideal single anticoagulant regimen for preventing thromboembolic disease in pregnancy exists. Hirsch *et al* (1970) suggested an alternating regimen of using heparin during the first trimester and during the last 3 weeks of pregnancy and oral anti-coagulants to be used from the 13th to 36th week. This method provides reasonable protection although it has a practical drawback in accurate prediction of the conception in order to change the regimen in time.

The present case had continued to take oral anti-coagulants before and during her pregnancy but fortunately had no teratogenic or haemorrhagic complications although oral anti-coagulants were discontinued only 1 week prior to surgery. The possibility of mental retardation in the baby cannot yet be ruled out. Breast feeding is no more a hazard in these cases if the patient is receiving warfarin (Baty *et al*, 1976 and Leorme *et al*, 1977).

Avoidance of anticoagulants is obviously best for the foetus but subjects the mother to foetal risk of vascular embolism. The better alternative is the use of biological valves rather than prosthetic heart valves in a young female as the former does not require life long anticoagulant therapy. The subject of family planning should be discussed early and firmly in these patients.

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