CAESAREAN SECTION UNDER EXTRADURAL ANALGESIA IN A PATIENT WITH EBSTEIN'S ANOMALY

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SUMMARY

Ebstein's anomaly is a rare congenital malformation of the tricuspid valve, often associated with an atrial septal defect. Death occurs usually from cardiac arrhythmias. The successful use of a two-catheter technique for elective Caesarean section with extradural analgesia is described and the hazards associated with Ebstein's anomaly in pregnancy and anaesthesia are discussed.

Ebstein's anomaly is a rare defect which involves the septal cusp of the tricuspid valve. The cusp is elongated so that it embraces part of the right ventricle, thus atrializing a portion of the ventricle. The anomaly is associated frequently with an atrial septal defect and the patients are subject to paroxysmal arrhythmias. Clinically, Ebstein's anomaly presents with a spectrum of symptoms, patients ranging from those who are asymptomatic to those who are cyanosed, with a right-to-left shunt and high pulmonary vascular resistance.

There have been no reports detailing the management of patients with Ebstein's anomaly in late pregnancy or of the difficulties involved. In this report one such patient is described.

CASE REPORT

A 31-year-old primigravida underwent an elective Caesarean section at 36 weeks gestation because of fetal growth retardation. The diagnosis of Ebstein's anomaly had been confirmed at age 16 yr by cardiac catheterization which showed a displacement of the tricuspid valve and atrio-ventricular junction, with a patent foramen ovale. Pulmonary vascular resistance was normal.

Since that time, the patient had remained in good health and, although subject to cyanosis and dyspnoea on marked exertion, was able to undertake a full-time job and daily housework without symptoms. At the age of 28 yr she had undergone general anaesthesia for tubal insufflation and wedge resection of the ovaries.

The first two trimesters of pregnancy were eventful and the patient was able to carry on with her normal daily activities, although experiencing slight dyspnoea on climbing stairs and with strenuous housework. She was admitted at 30 weeks gestation for observation and estimation of fetal growth.

On examination there was slight central cyanosis. The patient was neither dyspnoeic nor distressed. Heart rate was 90–100 beat min⁻¹ in sinus rhythm. Arterial pressure, when seated, was 140/90 mm Hg. On auscultation at the left sternal border there was a split first heart sound, a pansystolic murmur, a widely split second heart sound and mid-diastolic murmur. Third and fourth heart sounds were also present. The electrocardiogram (ECG) revealed right bundle branch block. A 24-h ECG demonstrated that heart rhythm was predominantly sinus, with occasional premature ventricular ectopic beats, 1 min of bigeminy and an episode of atrial arrhythmia. Chest x-ray was normal.

It was decided to conduct the operation under extradural anaesthesia and, so as to limit the dose of local anaesthetic and possible cardiovascular complications, a two-catheter technique was thought appropriate (Bromage, 1978).

Before commencement of the blockade, both legs were bound with crepe bandages to minimize the effect of blood pooling as a result of peripheral vasodilatation. Continuous ECG monitoring was instituted, an inspired oxygen concentration of 50% administered and an infusion of lactated Ringer's solution commenced i.v. Arterial pressure was measured automatically every 2 min throughout the procedure. Prophylactic antibiotics were administered.

In the sitting position using the standard loss of resistance technique, the first catheter was introduced 2 cm in a cephalad direction to the extradural space via the T12/L1 interspace. A second catheter was introduced 4 cm caudally via the L4/5 inter-
space. Bupivacaine (Marcain) 0.75% without adrenaline was used. A total dose of 11 ml of solution, over the next 15 min, produced good analgesia from S5 to T6.

Arterial pressure remained at its preoperative values throughout institution of the blockade. Lactated Ringer's solution 500 ml had been infused by the time the patient was ready for surgery.

Throughout the operation blood loss was replaced with lactated Ringer's solution 400 ml initially, and then with 1 unit of whole blood. Slight discomfort was treated with 1.5% lignocaine (without adrenaline) 5 ml through each catheter, in the supine position. At delivery, Syntocinon 10 i.u. was given slowly i.v.

The patient was observed for 24 h with continued monitoring of ECG and arterial pressure. The leg bandages were removed after 6 h. Opioid analgesic drugs were prescribed for relief of pain. The postoperative course was uneventful.

The child weighed 1.78 kg and had an Apgar score of 9 at 1 min. He was found to have a cardiac anomaly consisting of a small ventricular septal defect, patent ductus arteriosus and hypoplastic descending thoracic aorta. These were corrected partially by surgery 36 h after delivery and the child has since made a good recovery.

DISCUSSION

Patients with Ebstein's anomaly may vary from those who are asymptomatic to those who are severely disabled. In the asymptomatic patient, morbidity and mortality may be little greater than for normal mothers who come to elective Caesarean section, whilst if there is marked shunting with an increased pulmonary vascular resistance the mortality will be substantial (Sprue, Blake and MacDonald, 1981).

Only when the tricuspid malformation is severe is cyanosis present in Ebstein's anomaly (Pocock, Tucker and Barlow, 1969). However, in this patient there was no cyanosis during normal activity before pregnancy and only mild cyanosis during it. Accordingly, we felt that extradural anaesthesia would be appropriate, as this has been shown to be a safe procedure in patients with severe cardiac lesions in whom pulmonary vascular resistance was increased (Spinnato, Kraynack and Cooper, 1981).

At operation, antibiotics should be given as prophylaxis against bacterial endocarditis. Ergometrine should be avoided because of its adverse effect on the pulmonary vasculature. Syntocinon, by the i.m. or i.v. routes, is a suitable alternative.

If the fetal condition is suitable and there are no maternal contraindications, the route of choice for delivery is per vagina, with a selective lumbar extradural blockade for analgesia (Crawford and Mills, 1971). If Caesarean section is necessary, extradural anaesthesia is a safe alternative to general anaesthesia, providing arterial hypotension is avoided.
EXTRADURAL ANALGESIA AND EBSTEIN'S ANOMALY

ACKNOWLEDGEMENTS
We thank Dr C. A. Snodgrass, Consultant Obstetrician, whose patient is reported and Drs Tunbridge and Evemy, Consultant Cardiologists, for their advice.

REFERENCES

CESARIENNE SOUS ANESTHESIE PERIDURALE CHEZ UNE PATIENTE PORTEUSE D'UNE ANOMALIE D'EBSTEIN

RESUME
L'anomalie d'Ebstein est une malformation congénitale rare de la valve tricuspid, souvent associée à une communication interauriculaire. La mort survient en général du fait de troubles du rythme. Nous décrivons ici l'utilisation couronnée de succès d'une technique de double cathéter pour une césarienne réglée sous analgesie péridurale. Par ailleurs, les risques de la grossesse et de l'anesthésie, chez les patientes porteuses de cette anomalie, sont discutés.

KAIERSCHNITT BEI EXTADURALANÄSTHESIE BEI EINER PATIENTEN MIT EBSTEINSYNDROM

ZUSAMMENFASSUNG

OPERACION CESAREA BAJO ANALGESIA EXTRADURAL EN UNA PACIENTE CON MALFORMACION DE EBSTEIN

SUMARIO
La anomalía de Ebstein constituye una malformación congénita rara de la válvula tricuspid, asociada muy a menudo con un defecto del tabique auricular. Habitualmente, la muerte ocurre a causa de arritmias cardiacas. Se describe el uso exitoso de una técnica basada en una doble sonda en una operación cesárea con analgesia extradural, así como se discute de los riesgos asociados con la malformación de Ebstein en el embarazo y la anestesia.