

Low dose Combined Spinal Epidural (CSE) anaesthesia for early caesarean delivery in a patient with Ebstein’s anomaly.

K Boussouara, P Bolton
Queen Elizabeth University Hospital, Glasgow

Introduction

We present the case of a pregnant woman with severe Ebstein’s anomaly who recieved CSE anaesthesia for caesarean delivery. Ebstein’s anomaly describes a rare congenital disorder of the tricuspid valve resulting in “atrialisation” of the right ventricle” which is associated with other structural and conduction defects [1].

Background to Condition

- First described by Wilhelm Ebstein in a case report from 1866
- The septal and posterior leaflets of the tricuspid valve adhere to the underlying myocardium due to a failure of delamination during embryonic development. The anterior leaflet of the tricuspid valve is tethered and may have fenestrations. There is an apical displacement of the functional annulus and an “atrialisation” of the right ventricle with various degrees of hypertrophy and thickening.
- There is an overall functional impairment of the right ventricle with tricuspid regurgitation that impedes forward flow.
- Clinical features include cyanoyis, right sided heart failure, arrhythmias, and sudden cardiac death. Symptoms may manifest at any point from the neonatal period through to adulthood.
- It is often associated with other congenital cardiac pathology.

References:

1 Attenhofer Jost CH, Connolly HM, Dearani JA, Edwards WD, Danielson GK. Ebstein’s Anomaly. Circulation 2007;115(2):277–85. Doi: 10.1161/CIRCULATIONAHA.106.619338.
2 McNaught AF, Stocks GM. Epidural volume extension and low-dose sequential combined spinal-epidural blockade: two ways to reduce spinal dose requirement for caesarean section. International Journal of Obstetric Anesthesia 2007;16(4):346–53. Doi: 10.1016/j.ijoa.2007.03.013.

Correspondence: khalid@boussouara.co.uk

Case Report

A 28 year old primiparous woman with severe Ebstein’s anomaly, was scheduled for early caesarean delivery and bilateral tubal ligation at 32+3 weeks gestation. Her previous surgical history included a right modified BT shunt in early childhood, subsequent takedown of the shunt and bidirectional Glenn procedure, right pulmonary arterioplasty and thrombectomy, multiple previous ablative procedures, and two previous ASD closures. A previous minor procedure was abandoned due to the development of atrial fibrillation following induction of general anaesthesia.

An arterial line was inserted prior to anaesthesia under CSE. A split level CSE was performed with an 18G Tuohy and 25G Sprotte needle. Prior to injection of the spinal, the epidural component was tested with 3ml 0.25% levobupivacaine. The spinal dose was 1.6ml of 0.5% heavy bupivacaine and 300micrograms of diamorphine. Phenylephrine 100mcg/ml infusion was administered to avoid hypotension. A block height of T2/T2 was achieved at 10 minutes without significant haemodynamic instability and without need for top up of the epidural component, which was not used further during the procedure. Following delivery of a live infant, a 5 unit Syntocinon IV bolus was given slowly via an infusion pump. Total time from spinal injection until end of procedure was, approximately 75 mins, with an estimated blood loss of 350ml.

Postoperatively she was managed in our obstetric HDU for a 48 hour period, with removal of her invasive arterial monitoring after a 24 hour period. Post delivery ECHO showed no significant deterioration. Following discharge home, she received postpartum follow up via the adult congenital cardiac service.

Figure 1: Ebstein Anomaly Digrammatic representation

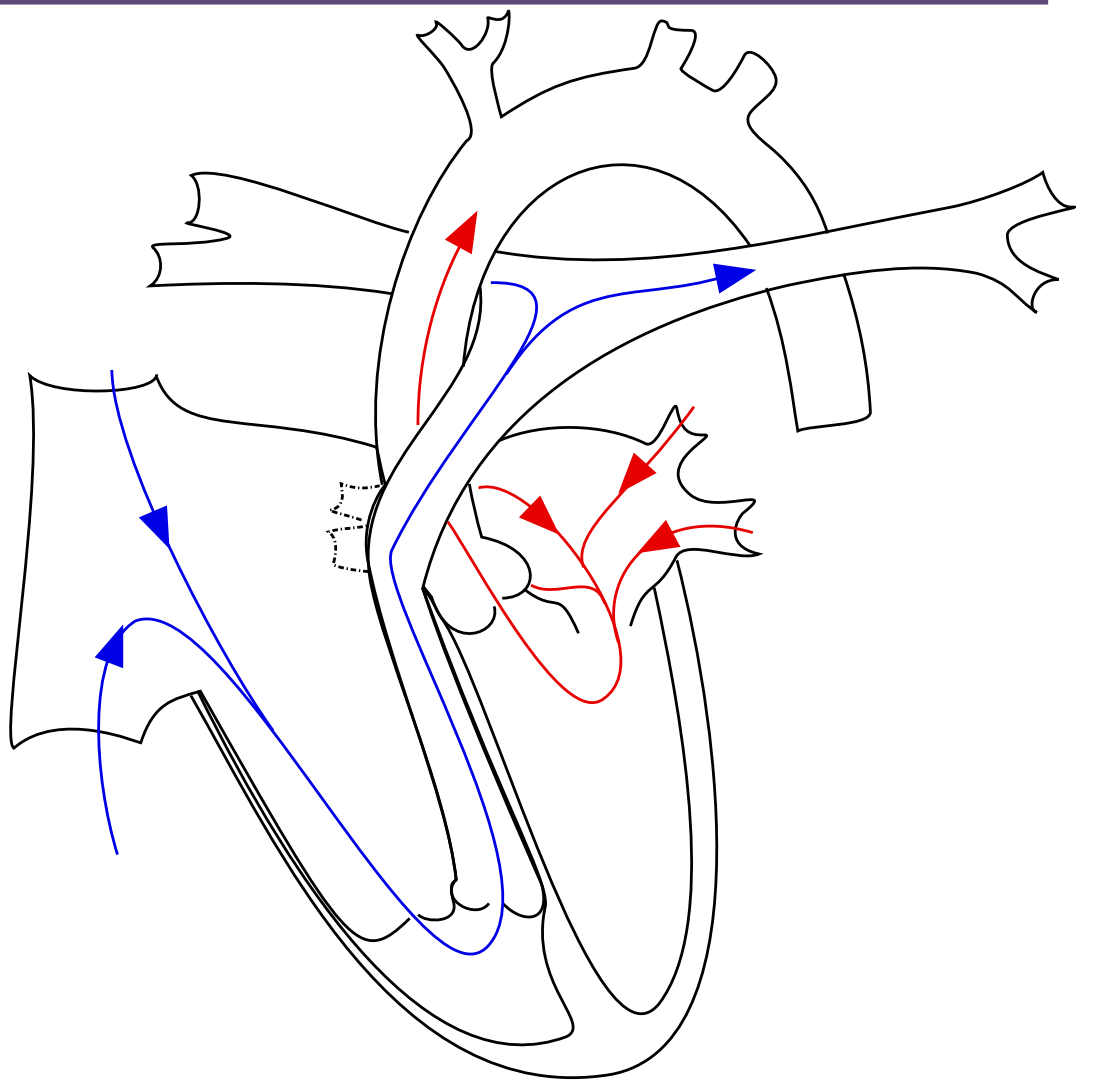


Figure 2: Patient’s pre operative ECG

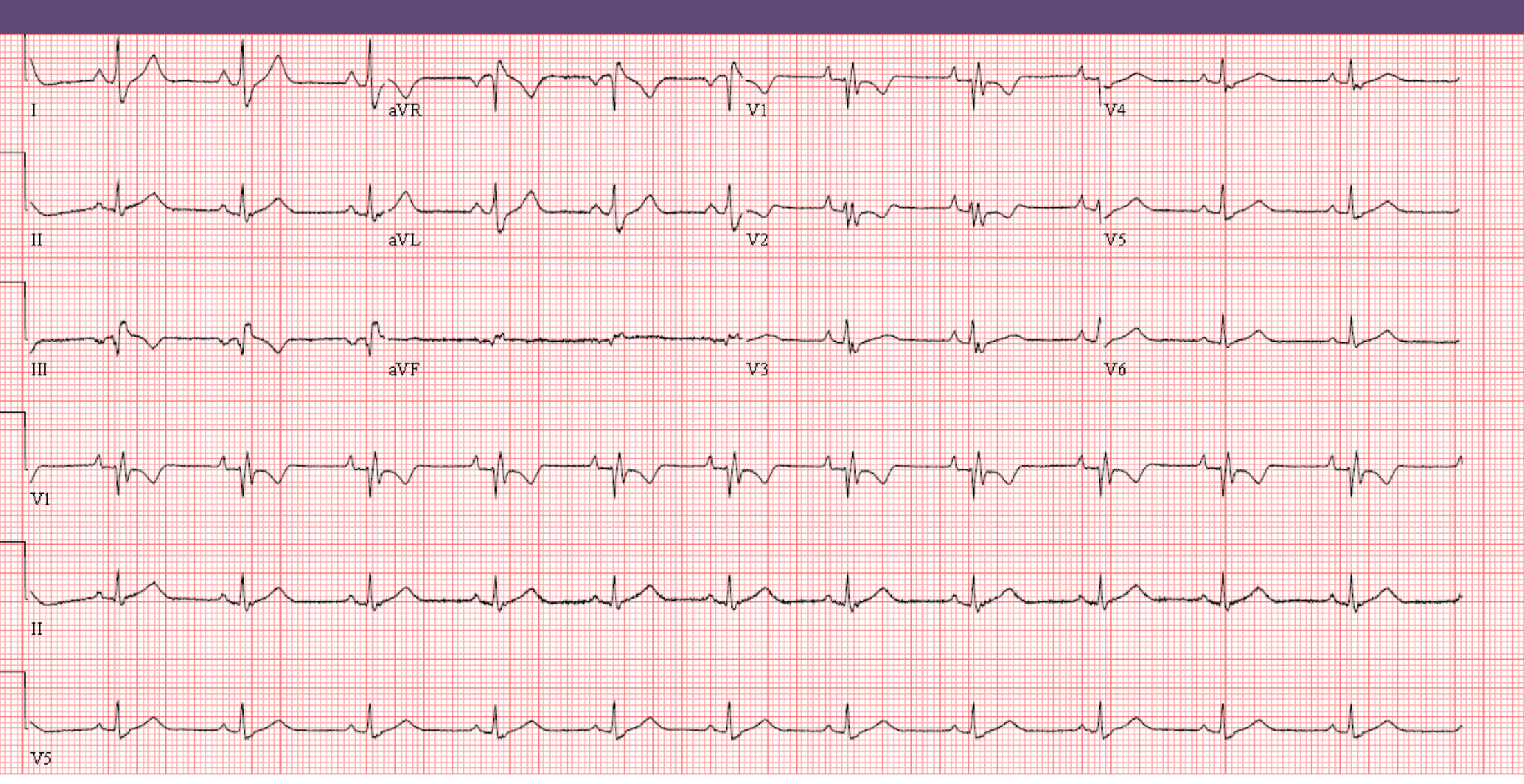
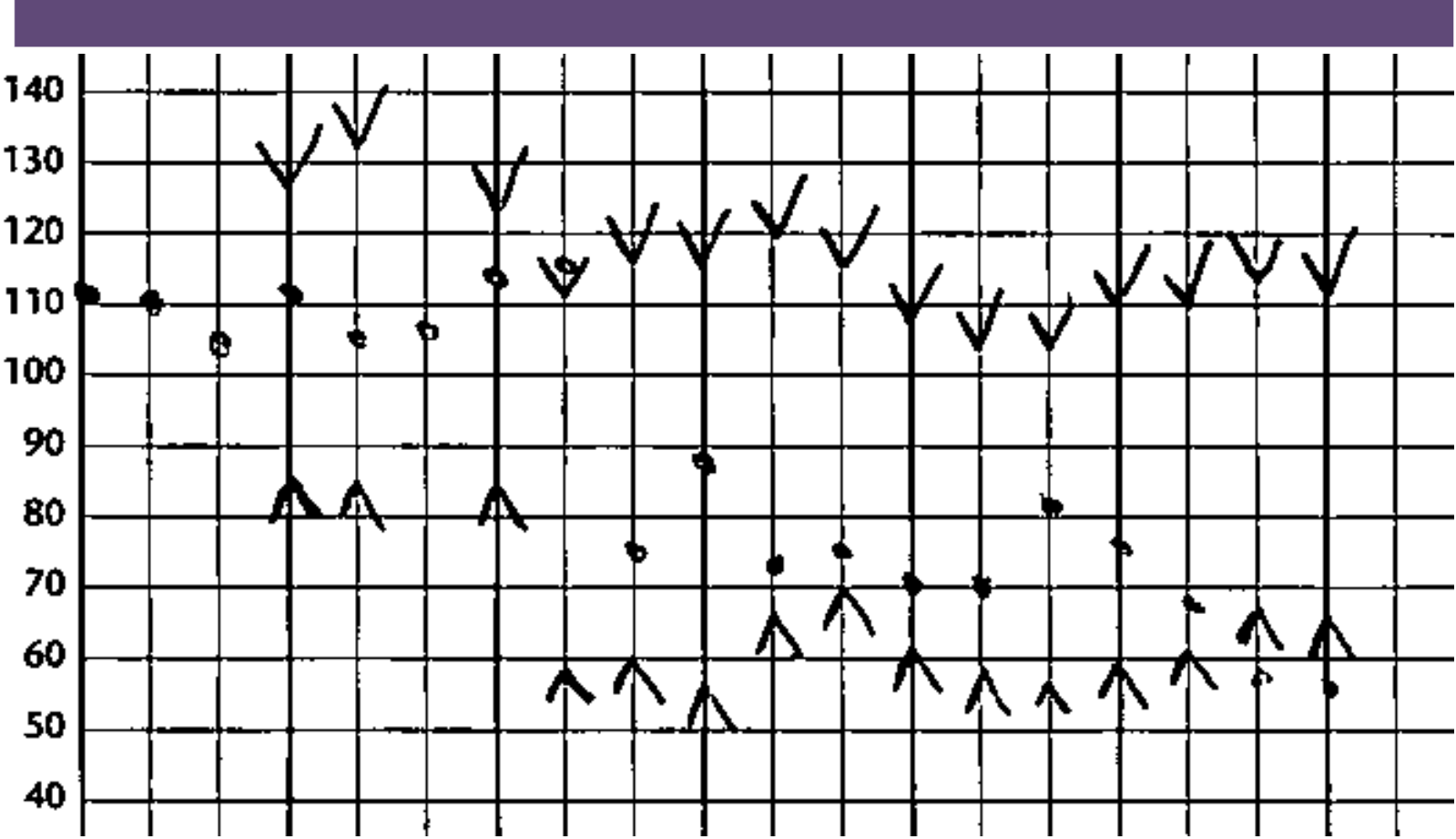


Figure 3: Intraoperative Haemodynamics



Post Delivery ECHO:

- Small LV cavity, significant septal flattening due to right heart volume overload, at most mild LV dysfunction.
- Atrialised RV with moderate RV dysfunction
- Moderate TR
- No Residual ASD noted

Discussion

Despite a spinal dose of 8mg bupivacaine, an adequate block height was achieved in the usual time without significant haemodynamic instability and this was sufficient for anaesthesia. This could be related to the patient’s stature (height of 1.52m). There may also have been a degree of epidural volume extension provided by the test dose, but with a small volume this is unlikely to have been significant [2]. Whilst in this case haemodynamic stability was maintained, subsequent cases may benefit from an even further reduced dose of spinal bupivacaine.