



Letter to the Editor

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Remifentanil labor analgesia in a parturient with Brugada syndrome

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Brugada syndrome (BS) is an inherited autosomal dominant ion channelopathy that increases the risk of ventricular tachycardia, ventricular fibrillation, and sudden cardiac death. It has an incidence of one to five per 10,000 people in Europe to as high as 20 per 10,000 people in Southeast Asia [1]. Channelopathies were highlighted as one of the most common causes of maternal mortality from heart disease in pregnancy in the 2016 Mother and Babies: Reducing Risks through Audits and Confidential Enquiries in United Kingdom report. Physiological stress observed in labor, fever, exaggerated vagal tone, electrolyte disturbances, and sodium channel blockers can precipitate malignant ventricular arrhythmias in BS. Remifentanil patient-controlled analgesia (Remi PCA) is a well-established, feasible alternative to labor epidural analgesia [2]. We present the safe and successful use of intravenous (IV) Remi PCA for labor in a parturient with BS.

A 30-year-old primipara with a body mass index of 25.3 kg/m² (booking weight 69 kg, height 165 cm) with BS was referred to the obstetric cardiac clinic in her early pregnancy. She had a family history of cardiac arrest (her brother experienced cardiac arrest at the age of 19 years), leading to familial genetic screening and detection of SCN5A mutation. The patient's baseline electrocardiogram (ECG) result was normal, but she had a Brugada ECG pattern (coved-type ST segment elevation > 2 mm, followed by a negative T wave in "high" V1-V3 leads) on Ajmaline testing (Fig. 1, pattern highlighted by the arrow). She was offered an implantable cardioverter defibrillator, considering her family history, but she declined to have one. Throughout pregnancy, there were no issues with her rhythm disturbance, she had a fairly good exercise tolerance, and no structural abnormalities were reported on transthoracic echocardiography.

She was discussed at the cardiac obstetric anesthesia multidisciplinary team (MDT) meeting. A vaginal delivery was planned, and the patient was informed regarding labor analgesia options including 50% medical nitrous oxide and 50% oxygen mix (Entonox[®], BOC, United Kingdom), intramuscular diamorphine, Remi PCA, and a labor epidural analgesia. Key recommendations of the MDT included planned induction in the delivery suite, appropriate noninvasive hemodynamic monitoring, hourly temperature monitoring, keeping serum potassium > 4 mmol/L and magnesium > 0.8 mmol/L during the peripartum period, appropriate analgesia use and attachment of external defibrillator pads, and availability of the defibrillator in the delivery room. A list of medications to be avoided was included in her cardiac care plan from the website (www.brugadadrugs.org) that included ergometrine, metoclopramide, misoprostol, suxamethonium, tramadol, amiodarone, and ketamine.

Once the woman was in established labor at 38 weeks in our delivery suite, continuous ECG, pulse oximetry (SpO₂), and noninvasive blood pressure (NIBP) monitoring was initiated, and external defibrillator pads were applied to her chest. The patient requested a Remi PCA, which was programmed to administer a bolus of 20 ug of IV remifentanil with a 3-minute lockout as per unit protocol. Continuous nasal oxygen was administered

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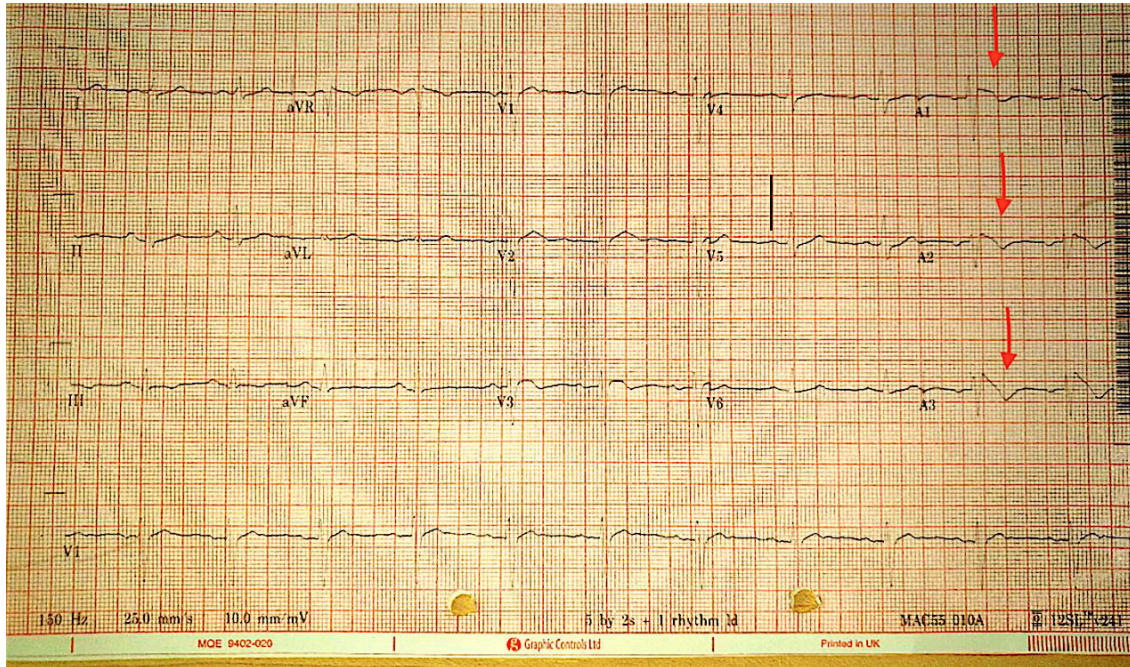


Fig. 1. Brugada electrocardiogram pattern (arrows) evident on Ajmaline testing in the high precordial V1–V3 leads.

at 2 L/min, and her heart rate (HR), ECG, respiratory rate, NIBP, SpO₂, and sedation score were monitored every 15 minutes for the first hour then every half hourly with one-to-one midwifery care as per our hospital policy. She proceeded to have an uneventful vacuum-assisted vaginal delivery in the room. Her mean maternal HR, arterial pressure during labor analgesia, SpO₂, and temperature were 96 beats/min, 92 mmHg, 97%, and 36.9°C during the peripartum period, respectively. Oxytocin 5 I.U. was administered in the form of slow IV infusion over 20 minutes to maintain uterine tone. Pain was reasonably well controlled with Remi PCA throughout, and she was significantly satisfied with the analgesia. A total of 1.58 mg of remifentanyl was administered during labor (which lasted just over 4 hours) until the delivery of the neonate. APGAR scores for the neonate were 7, 9, and 10 at 1, 5, and 10 minutes, respectively.

We believe this is one of the first case reports of successful use of Remi PCA for labor analgesia in a parturient with BS. We failed to determine any case report published in the English literature regarding successful use of Remi PCA for labor analgesia in this cohort. We found one case of BS where Remi PCA was commenced at 40 µg bolus with a 2-minute lockout, but the patient reported dizziness. Hence, the medication was discontinued [3]. We used a lower dose of 20 µg and a 3-minute lock-out interval, which is well established in the literature. One-to-one care with a senior midwife was provided, with midwife being present throughout the duration of PCA. No hemodynamic instability or respiratory events such as apnea or hypoxia or hypotension or any

other side effects were noted in our parturient. Although local anesthetics (LAs) are used for epidural labor analgesia in BS, arrhythmias have been reported due to their sodium-channel blocking properties, specifically following the use of bupivacaine. Thus, LAs should be induced with caution in BS [4].

Remi PCA was selected by our patient and was included in our multidisciplinary care plan as we believed that it had more advantages compared to a labor epidural analgesia.

It is a short-acting, reversible, and an effective analgesic. There are previous case reports describing its successful use in non-obstetric patients with BS and in suppressing the pressor response of laryngoscopy and intubation in BS patients having a general anesthetic as it is fairly cardio stable. Considering the possible association between fever and epidural analgesia, a trigger for arrhythmia in BS is also minimized. A recent trial also suggested that Remi PCA could potentially decrease the risk of instrumental deliveries, reducing the risk of exposure of the parturient to LA in the theatre from spinal or epidural anesthesia [5].

We found Remi PCA to be both safe and effective with appropriate monitoring and one-to-one midwifery care and recommend its use as a useful alternative to labor epidural analgesia in BS. We encourage clinicians using Remi PCA to report their outcomes in women with BS to further confirm its safety and efficacy.

Conflicts of Interest

No potential conflict of interest relevant to this article was reported.

Author Contributions

Carla Gould (Data curation; Writing – original draft)

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