Intramuscular ketamine in a parturient in whom pre-operative intravenous access was not possible

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We describe the management of a 23-yr-old woman with extreme needle and mask phobia, presenting for an emergency Caesarean section for fetal distress. She also suffered from spina bifida cystica with no sensation from mid thigh. Regional anaesthesia, rapid sequence induction, and gaseous induction were not possible. She was managed successfully with i.m. ketamine followed by a more conventional anaesthetic technique.

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Patients with an aversion to either needles or masks are not uncommon, but those with a marked phobia to both are more rare, and can present an anaesthetic dilemma. However, in general, they can be persuaded to undergo either an i.v. induction, following the use of a topical local anaesthetic for cannulation, or a gaseous induction, with the promise of a pleasant smelling agent and a clear mask. In this case, we were presented with a patient who was...
A 23-yr-old female presented in the early hours of the morning, for an emergency Caesarean section for fetal distress at 29 weeks gestation. She suffered from spina bifida cystica and was wheelchair bound. She had a functioning ventricular peritoneal shunt in situ for hydrocephalus and was incontinent of both urine and faeces. She was taking prophylactic amoxycillin for recurrent urinary tract infections but was on no other medication. Her obstetric history consisted of a previous neonatal death at 22 weeks and a miscarriage at 8 weeks. She had numerous anaesthetics in the past, but none at this hospital.

This lady had been admitted electively the previous day for steroid therapy and was now having irregular contractions but was not in established labour. A CTG trace showed prolonged late decelerations. It was decided that a Caesarean section was needed and the patient, although initially reluctant, agreed and gave written consent. Until this time, she had not been referred to an anaesthetist.

The patient signed her consent form on condition that she would have a general anaesthetic and would not have any injections in her arms or have a mask. She was extremely needle phobic, and her notes were littered with previous refusals to have injections and blood tests. She was, however, willing to have a drip sited in her lower legs, as she ‘would not feel it’, as she was numb from mid thigh. This had been done for a previous anaesthetic. She refused to consider the use of a topical local anaesthetic, prior to siting a drip in her arms, saying that it ‘doesn’t work’.

She also refused to have oxygen administered pre-operatively, or to consider a gaseous induction and would not allow the use of cricoid pressure. She would consent only to an injection into the insensate portion of her legs and was amenable to any necessary action being taken once she was unaware.

Examination revealed a female of short stature, with swollen oedematous legs, and no visible veins. We estimated her height as 130 cm and her weight as 40 kg (BMI=23). She was pigeon chested with a short neck but normal head, neck and jaw movement and a Mallampati score of 2. She was also confirmed to be anaesthetic to mid thigh bilaterally.

The risks of a general anaesthetic and our proposed plan of action were clearly explained to her and were accepted. She was given sodium citrate as antacid prophylaxis and transferred to the obstetric theatre. She was placed in a supine position with a left lateral tilt. It was not possible to obtain venous access in her legs, so an i.m. injection of ketamine 400 mg (10 mg kg⁻¹) was administered. After a 10-min interval, the patient was sufficiently compliant for oxygen to be administered, cricoid pressure to be applied and an i.v. cannula sited (16 g in the right forearm). A conventional anaesthetic consisting of i.v. thiopentone 200 mg (5 mg kg⁻¹) and suxamethonium 100 mg was then administered. Intubation was performed without any difficulty and anaesthesia maintained with 30% oxygen, 70% nitrous oxide, and 1% isoflurane. Atracurium was given to maintain muscle relaxation. Monitoring included pulse oximetry, non-invasive arterial pressure, ECG, capnography, and ventilator alarms.

A live female infant was delivered 10 min later. She needed to be intubated and the 1 and 5 min APGAR scores were 5 and 9, respectively. She was taken to the Special Care Baby Unit but was transferred to the regional specialist neonatal unit 36 h later.

The remainder of the surgery and anaesthetic was uneventful. Post-operatively, the patient was kept on the obstetric HDU until the morning. When reviewed at that time, she was alert, pain free, and satisfied with her anaesthetic management. She had not required any analgesia. She was subsequently transferred with her baby to the regional centre.

Discussion

Spina bifida cystica occurs in 1–3 per 1000 births and is because of the failed closure of the neural arch with herniation of the meninges and or neural elements through the vertebral defect. It is associated with pre-term labour. Successful epidural anaesthesia has been described, but may be unreliable below the level of the defect. However, in general, subarachnoid block is effective. Unfortunately, in this case, the patient’s severe needle phobia prohibited the use of either technique.

The risks of general anaesthesia in pregnant patients are considerable. The major risks are hypoxaemia and aspiration. It is for these reasons that pre-oxygenation and the use of cricoid pressure are now routine in the administration of a general anaesthetic for all obstetric cases. However, our patient refused to allow the use of either and as the risks had been clearly explained, and were accepted by her, we proceeded.

We were faced with a patient who wished to have a general anaesthetic, but in whom we were unable to obtain pre-operative venous access. Furthermore, the usual alternative of a gaseous induction was also prohibited. This left us with three options: the use of a large dose of sedative premedicant orally, the administration of an agent rectally, or the use of an i.m. agent. We felt that an oral pre-med would have had an adverse effect on the already distressed foetus, and would have been more time consuming. For
similar reasons, we did not consider a rectal agent particularly in view of her incontinence.

We opted for ketamine i.m., as its use in Caesarean sections is well described.\textsuperscript{7–9} It has good haemodynamic properties\textsuperscript{8} and does not cause neonatal depression.\textsuperscript{7–9} Its use by the i.m. route is less common, and is reserved mainly for the management of difficult children.\textsuperscript{10} It is associated with nightmares in the recovery period, but in this case none were reported. We did not give any opioids or benzodiazepines, which are often used to attenuate these, but did ensure a quiet environment for recovery. Further, ketamine has analgesic properties,\textsuperscript{11} which undoubtedly contributed to the pain free state of the patient postoperatively. However, the complete lack of analgesic requirements may not be attributable solely to the ketamine, and may be because of an altered sensation on the part of the patient.

We used a ‘normal’ induction dose of thiopentone (5 mg kg\textsuperscript{-1}) before intubation. We acknowledge that this was probably a larger dose than was needed in a lady who had already been given ketamine but wished to ensure unconsciousness in a patient in whom ketamine had yet to reach full effect.

This case illustrates the need for close co-operation between the obstetric and anaesthetic departments. This was a patient in whom obstetric intervention was highly likely, and who was clearly going to be difficult to manage. In addition, she was an inpatient for steroid therapy, because of the risk of early labour. However, she was not brought to our attention until late at night when the decision to perform an emergency Caesarean section had been made. Early referral to an anaesthetist may not have altered our subsequent management but would have given us time to plan. Furthermore, interview of the patient under less fraught circumstances, and frank discussion of all the options and risks may have resulted in a more co-operative and less anxious patient and would have expedited the delivery of the distressed baby.

References

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