Correspondence

Epidural in labour: easy technique, failed analgesia

EDITOR:
A 29-yr-old, 1.54 m tall, 79 kg, nulliparous female, presented to the obstetric unit in active labour with 4 cm cervical dilation. Epidural analgesia was requested and informed consent was obtained. In the sitting position, with aseptic technique, an 18-G Tuohy needle was introduced on first pass into the epidural space using the loss of resistance to air technique at the L3–L4 interspace. The distance from the skin to the epidural space was 4.5 cm. No blood or cerebrospinal fluid was observed. A multi-holed catheter was threaded 4 cm into the epidural space without eliciting paraesthesia. After a negative aspiration, 10 mL of a solution containing 0.16% ropivacaine and 10 µg of sufentanil was administered as a bolus in incremental doses. No labour pain relief was observed over the following 30 min. After re-checking that the composition of local anaesthetic solution was correct and presuming catheter misplacement, another catheter was placed at the L2–L3 interspace using the same technique. The epidural space was found at the same distance from the skin. A catheter was easily passed 4 cm into it. An 8 mL bolus of 0.2% ropivacaine was then administered, but no analgesic effect was recorded in the following 20 min. Assuming that the epidural space was correctly identified the catheter was pulled back 1 cm, negative aspiration was re-confirmed and another 8 mL bolus of 0.2% ropivacaine was administered. Shortly after, the parturient complained of paraesthesia followed by anaesthesia of the anterior and lateral aspects of the right thigh. Motor function was preserved. No other anomalies were identified in the neurological examination. She had no labour pain relief.

The patient was closely observed with the catheter in place. Labour proceeded until complete cervical dilation. At the beginning of the second stage, due to acute fetal distress associated with fetopelvic incompatibility, an emergency Caesarean section was performed (Fig. 1). The catheter was then removed. No events were recorded during the ensuing hospital stay. The patient was observed 1 and 6 months later and demonstrated a normal clinical examination.

Discussion
Incomplete or failed epidural analgesia or anaesthesia has been reported with variable incidences, apparently reflecting variability in definitions, authors’ clinical judgement and perception, practice parameters or hospital settings [1–3]. It is one of the major concerns of anaesthetists performing this technique in the setting of obstetric care.
The aetiology and mechanisms of failed or incomplete epidural analgesia in obstetrics are complex, multifactorial and not entirely understood. The potential causes and contributing factors have been grouped in the literature into four major categories: anatomic factors; technique, methodology and equipment; patient-related factors; technical skills or performance factors. In this case, technical difficulties or equipment problems were not found. The epidural space was easily identified in both attempts. Transformaminal catheter migration as seen in Figure 1, is clearly the cause of epidural failure in this case. In our opinion this could have occurred due to anatomic factors. The existence of a connective tissue structure in the epidural space could have worked as a barrier preventing cephalic progression, directing and facilitating catheter extrusion through the intervertebral foramem. In fact, several authors, using autopsy, imaging and endoscopy studies, have shown the presence of epidural midline structures that can interfere with epidural performance [4–7].

Another contributing factor could be a ‘disproportionate’ insertion – ‘too much catheter’ – in this short stature patient. Even though 3 or 4 cm insertion into the epidural space is correct, we could speculate that effective analgesia would be obtained if the catheter had been pulled back leaving only 1 or 2 cm in place.

The sensory alterations the patient had in the right thigh can be explained by the accumulation of local anaesthetic in the proximity of the lumbar plexus nerves responsible for the innervation of that area.

Optimizing the loss of resistance technique does not preclude having challenging problems when performing epidurals or trying to find a cause for failure. Also, in this particularly demanding setting, alternatives are significantly less effective and often less safe.

Imaging methods applied to the epidural technique could be the definitive answer to some of our well-founded concerns when performing this modality of anaesthesia/analgesia.

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References

Lateral neck radiography

EDITOR:
We read the original article by Kamalipour and colleagues with great interest [1]. Prediction of difficult intubation cases with 100% sensitivity is the ultimate goal of all the anaesthesiologists and so far the data presented in this article seems to provide quite objective criteria. We have previously performed a clinical and anatomical analysis of the measurements (thyromental, hyomental, sternomental distances) in 334 patients and 12 cadavers [2]. The goal of our study was to determine whether these parameters were affected by age and gender. In this study we have shown that hyomental distance was the only variable not influenced by age and gender [2]. Kamalipour and colleagues stated that 64 male and 36 female, aged 18–89 were enrolled in their study. However, no descriptive data concerning the distribution of age groups were given and statistical comparison between age, gender and study parameters were not presented. Since thyromental and sternomental distances are prone to be affected by age and gender it would be

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wise to analyze the data and provide additional information on the impact of these factors.

Kamalipour and colleagues stated that the radiation risk is negligible as the radiation dose of a lateral neck X-ray is far below the safe dose per year. However, the authors also stated that this technique is ‘had no monetary cost’. At University Hospitals in Turkey the cost of a lateral neck X-ray is 6.3 New Turkish Lira (approximately US $5). Although this cost may be considered as a very low or negligible, it will bring an additional cost in large scale hospitals if used as a screening test. We believe that it is wise to use this non-invasive technique in patients prone to difficult intubation such as patients with higher Mallampati Classes (III–IV).

The patient population in the study of Kamalipour and colleagues was only 100 patients. The limited number of patients enrolled to the study questions the power of the study. Besides, in Table 1 it is obvious that there were only four patients with Mallampati Classes III and IV. Four patients are inadequate to discuss or even reach a conclusion about the results of this study. Therefore, the results of this study cannot be used to cover the patient population with Mallampati Classes III and IV. Further investigation on patients with Mallampati Classes III and IV is needed to evaluate the relation between the study parameters and difficult intubation.

In conclusion, we believe that authors should address the effects of age and gender on study parameters and comment on the power of the study.

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References


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**Reply**

**EDITOR:**

We appreciate the comments on our original article. Drs Ates and Alanoglu have raised 3 questions. The first question relates to descriptive data concerning the distribution of age groups and statistical comparison between age, gender and study parameters. These data were analysed in our patients, however there were no statistically significant differences between them [1].

The second question concerns the number of the patients in the study (100 patients) and the low incidence of patients with difficult intubation. As was noted in the article’s introduction, the incidence of difficult intubation in surgical patients undergoing general anaesthesia is approximately 1–18% [2]. Accordingly, the minimum sample size was estimated using an a priori power analysis based on a confidence level of 0.95 and a power of 0.90. Therefore, the power of the study is statistically valid. In our study the incidence of difficult intubation was 15% (15 out of 100 patients), which was statistically sufficient [1]. Similar studies in which various clinical, skeletal (lateral X-rays) and soft tissue (three-dimensional computed tomography imaging or magnetic resonance imaging) measurements were used to predict difficult intubation, used similar number of patients (20 patients with difficult intubation) [3,4]. It must be noted that the four patients which were described by Drs Ates and Alanoglu, were classified as difficult intubation according to Mallampati Class II scoring.

The last comment concerns the cost–benefit of requesting a lateral X-ray prior to operation. At University Hospitals in Iran the cost of a lateral neck X-ray is 20 000 Iranian Rials and with insurance (which almost everyone carries) is 2000 Rials, approximately a quarter of a US Dollar. This cost is considered as very low or negligible and would not bring an additional cost in large-scale hospitals if used as a screening test. I should also note that when an anaesthetist faces an unpredicted difficult intubation it might cost the patient much more. In our setting, a single fibreoptic bronchoscopy costs 100 times more than a single lateral X-ray. However, we agree with the comment that in other institutions, this non-invasive technique will cost more and it may be...
wise to use it only in patients predicted as a difficult intubation such as patients with higher Mallampati Classes (III–IV).

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References

Tracheal intubation with and without muscular relaxation

EDITOR:
We have read with interest the article by Baillard and colleagues [1]. The authors argued that the use of a technique avoiding muscle relaxants did not appear to be associated with poor conditions for tracheal intubation, nor altered postoperative laryngeal symptoms [1]. Moreover, they proposed a more flexible approach to the issue of the need for neuromuscular blockade prior to intubation. They referred to our study which showed that adding atracurium to a propofol–fentanyl induction sequence significantly improved the intubating conditions and decreased postoperative hoarseness [2]. Due to the fact that our results are in contrary to the results of the study of Baillard and colleagues we would like to comment.

First, the study by Baillard and colleagues was an observational, not a controlled, study without randomization and patients designed to the relaxant-free trigger (at least before intubation), and were undergoing different types of surgery (mainly abdominal surgery in the relaxant group compared to orthopaedic and ear surgery in the relaxant-free group). Thus, both groups were not comparable, and therefore should not be compared.

Moreover, a muscle relaxant could be used (even in the group without muscle relaxant!) at the anaesthesiologist’s discretion to improve intubating conditions if at least one unacceptable variable was present. Second, the intubating conditions were not evaluated according to the consensus conference of good clinical practice [3], movement of limbs as a variable was omitted by the authors. This might have improved the overall intubating conditions because especially without muscle relaxation movement of limbs after tube insertion or cuff inflation occurred in nearly 20% of all patients of the muscle relaxant-free group [2]. Thus, the authors found better intubating conditions as there actually were. Third, all patients in our study were examined by stroboscopy the day before surgery and were not included into the study when pre-existing pathologic findings of the larynx were observed [2]. Of these not included patients with oedema, erythema or even granuloma of the vocal folds 30% had no hoarseness.

Finally, to support their relaxant-free technique, significantly higher doses of propofol (2.74 [2.27–3.33]) vs. (3.64 [2.94–4.52] mg kg<sup>−1</sup>) were required and topical lidocaine (lidocaine 5%, two sprays per 10 kg body weight) was systematically applied in the relaxant-free group. In addition, the authors reported induction-related hypotension in 14% of patients with no difference between the two groups. However, intervention criteria were not defined and absolute values were not shown, moreover, both groups were not comparable regarding age and ASA physical status (patients in the relaxant-free group were younger and in a better ASA physical status).

Thus, we suppose that in comparable patient populations the significantly higher induction dose of propofol would lead to significant differences in induction-related haemodynamic changes. Moreover, two sprays of lidocaine 5% per 10 kg body

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weight, as recommended by the authors corresponds to 135 mg topical lidocaine for a 75 kg patient (9 mg lidocaine per spray according to the manufacturer). Especially after surgery of short duration, this may lead to persistent pharmacodynamic effects in the postoperative period, such as vocal cord incompetence and swallowing difficulties, both risk factors for postoperative pulmonary aspiration. It would be useful if the authors could indicate a safe interval for the offset of these pharmacodynamic effects of high dose topical lidocaine.

Thus, the proposed technique is associated with less optimal intubating conditions, increased hemodynamic consequences as well as an increased risk of postoperative aspiration. We worry about the consequences of the implementation of the results of the published study [1] into clinical routine practice. This approach should be limited to patients with a known contraindication to neuromuscular blocking agents, and should not be recommended to large groups of elective patients.

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References

Reply

EDITOR:
We thank Dr Mencke and colleagues for their comments. Their comments about the methodological limits of our observational study are true but yet clearly reported in our article and it would seem that Dr Mencke and colleagues have not read the discussion section carefully enough [1]. Also, Dr Mencke and colleagues worry about the consequences of the implementation of our results into clinical practice. In contrast, as described in their study, they had apparently no problem with intubating the trachea when the laryngoscopic conditions were clinically unacceptable (i.e. the vocal cords closed or closing) [2]. Such a protocol and the related laryngeal consequence are not representative of clinical practice. It must also be remembered that the use of muscle relaxants may be associated with anaphylactic reactions with potentially life-threatening consequences and also residual curarisation and its related postoperative pulmonary complications [3–4].

Our hypothesis is that the controversy should not rest on the question of whether or not muscle relaxants should be routinely employed, but rather, proponents on both sides should endeavour to identify patient groups in whom the safety of intubation may be optimized by a conscious choice of sedation and muscular relaxation.

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References
Peripheral blocks for trigeminal neuralgia for facial soft tissue surgery: learning from failures

EDITOR:
I compliment Pascal and colleagues [1] for an excellent use of the block of the peripheral branches of the trigeminal nerve. However, their failure rate with regard to the block of infraorbital nerve surprises me. Their technique involves percutaneously feeling the depression of the foramen and inserting the needle 1 cm inferior to the foramen and tangentially advancing it upwards to the estimated location of the foramen. I feel it is the direction of the needle that may be responsible for the lower success rate. The infraorbital nerve is directed downwards, forwards and medially as it comes out of the foramen, the needle inserted in the opposite direction (i.e. upwardly, backwardly and laterally) is more likely to meet the nerve and is often manifested by paraesthesia in the distribution of the nerve. For the needle to be directed in this manner, the skin puncture should be about ½–1 cm below and medial to the depression felt percutaneously at the site of the foramen. It is a very simple block to perform and in our centre we have a high incidence of success. Besides the use for surgery, I have used the block for providing postoperative pain relief after cleft lip surgery in paediatric patients and for injection of neurolytic drugs to treat pain of trigeminal neuralgia involving the maxillary nerve. The higher incidence of success in the block of this nerve reported with the intraoral technique [2,3] may be due to the difference in the direction of the needle.

Peripheral nerve blocks provide safe and effective regional anaesthesia not only for soft tissue surgery but for other procedures like fixation of the fractured mandible and procedures on the maxilla. For that, however, I suggest block of the trunk of the appropriate nerve as it emerges from the skull using the lateral extraoral approach. Continuous mandibular nerve block has also been described for providing pain relief in the postoperative period [4]. The nerve blocks are a boon to many patients suffering from trigeminal neuralgia who do not have access to the advanced techniques like radiofrequency ablation or microvascular decompression and the difference in the quality of life that the neurolytic blocks make is great. I strongly suggest that these blocks should be practiced for anaesthesia and analgesia more often as these are simple and safe with a very high degree of success.

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