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CASE REPORT

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Urinary retention: a possible complication of unilateral continuous quadratus lumborum analgesia – a case report

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Abstract

Objective: Continuous quadratus lumborum (QL) analgesia is a new option for proximal femur surgery considered safe and effective. The purpose of this report was to show that we may not be aware of all the possible complications of this technique, and urinary retention may occur even when the block is performed unilaterally.

Case report: To an obese, intubated, mechanically ventilated, female patient, operated in prone position for removal of a femur tumour, we performed a trans-muscular quadratus lumborum block (TQL). We mounted a catheter and administered continuous infusion of local anaesthetic in the postoperative period. The patient experienced urinary retention. A urinary catheter was placed and it was maintained for the entire period of local anaesthetic infusion. When the catheter was removed, 72 hours after the surgery, the patient resumed normal bladder functions.

Conclusion: Urinary retention is a possible complication when continuous quadratus lumborum analgesia is used, even when performed unilaterally.

Keywords: quadratus lumborum block, ultrasound guided regional anaesthesia, urinary retention, toraco-lumbar plane block, regional anaesthesia complications

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Introduction

Femur is the leading site for both malignant and benign bone tumors [1]. Even so, the incidence of this pathology is rare and there is a paucity of reports about anaesthetic management. In this situation it seems rational to extrapolate from the abundant knowledge about anaesthetic management of hip replacement and femur fracture surgeries. For those, several anaesthetic options are available, and the current consensus is that the anaesthesia should be tailored on the patients' needs in correlation with associated comorbidities [2, 3]. The anaesthetic options include general anaesthesia, neuraxial procedures, lumbar plexus block or a combination of these. The focus should be on assuring an excellent postoperative analgesia without interfering with early mobilization. Regional anaesthesia techniques seem to be attractive choices [3].

The possibility to provide analgesia after hip and proximal femur surgery with the help of quadratus lumborum block (QLB) was described before [4-8]. At the moment there are a lot of unanswered questions about QLB use in clinical practice. There is no consensus about the place of injection, the best needle path, the best patient position, the local anaesthetics

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used, concentrations, volumes the need or the safety of using additives. QLB is generally considered to be a safe technique. The perceived safety may be the result of the fact that because it is a relatively new technique there is not much experience to report possible complications which may appear with lower incidence and in special circumstances. Some authors questioned this perceived safety as they encountered and reported hypotension after QLB [9]. We can expect that more side effects associated with the utilization of this new block will be reported once it will be generally accepted and used worldwide.

We present the case of a patient experiencing urinary retention after unilateral continuous quadratus lumborum analgesia for surgical excision of a proximal femur tumour.

Case report

Oral and written consent was obtained from the patient to write and publish this report.

A 63 years old woman, 163 centimeters tall, weighing 88 kilograms (body mass index 33 kg/m^2) with associated hypertension, type II diabetes mellitus and hypothyroidism, was scheduled for surgical removal of a 9/7 cm tumour mass, on the posterior-lateral side of the right femoral neck. The surgery was expected to be prolonged and difficult and prone position was to be used for a better exposure of the surgical site, so general anaesthesia with tracheal intubation was considered the anaesthesia of choice for this intervention. During the pre-anaesthetic evaluation, the patient expressed her concerns regarding the pain after the surgical procedure. The surgery was considered to imply great bleeding risk. The possible complications associated with epidural analgesia in this circumstance, specifically hypotension and the possibility of epidural hematoma formation, were considered to outweigh the benefits. The patient was informed about the possibility of ultrasound guided lumbar plexus block or QLB with catheter insertion for continuous infusion of local anaesthetics. The patient and the anaesthesiologist agreed that after the induction of general anaesthesia QLB will be performed and a catheter will be inserted for continuous infusion of local anaesthetics after the surgical procedure.

After an uneventful induction of general anaesthesia with midazolam, fentanyl, propofol and atracurium, the patient was placed in prone position and ultrasound guided quadratus lumborum type III block was performed using a trans-muscular technique (TQL block) described by Børglum [10] with a Contiplex® (BBraun, Melsungen, Germany) 100 mm set. The needle was inserted under ultrasound guidance and 30 mL of ropivacaine 0.25 % was injected with no additives. A good spread of the local anaesthetic anterior to the quadratus lumborum muscle was followed by the catheter insertion at this level. The correct placement of the catheter was checked with ultrasound by injecting a very small amount of air to increase the echogenicity of the catheter. The catheter was found to be in contact with the anterior border of the quadratus lumborum muscle. The surgery was performed through a Kocher-Langenbeck incision for a better exposure of the posterior femur. No further fentanyl administration was needed other than induction dose (150 micrograms) for skin incision and muscle dissection. However, when the surgical team reached the periosteum and started tumour dissection, the patient presented tachycardia and hypertension. We considered that the anaesthesia provided was not good enough to allow periosteum manipulation so we administered supplementary boluses of fentanyl, up to a total dose of 250 micrograms. Two hours after the beginning of the incision the skin was closed, the patient was turned supine and we allowed the patient to emerge from general anaesthesia. She reported no pain at the surgical site and no motor weakness. She was discharged from the operation room to the orthopedic ward with the indication to receive ropivacaine 0.2% in continuous infusion at a rate of 5 mL/h, paracetamol 1 g at every 8 hours if postoperative pain occurs and 50 mg of tramadol in the case of breakthrough pain.

8 hours later the patient required assistance because the sheets of herbed were wet without her being aware about what happened. A large amount of urine was present on the bed as estimated by the ward nurse. The patient reported no abdominal discomfort and no rest pain at the surgical site at this moment. The movement necessary for changing the bed generated pain 6 out of 10 on the numeric rating scale (NRS). 1 g of paracetamol was administered intravenously with good pain relief. Another two hours later the patient accused some discomfort in the abdominal area. The on call surgeon was summoned, and he made the clinical diagnosis of urinary retention. He mounted a urinary catheter followed by the emission of 900 mL of urine and discomfort relief.

The ropivacaine infusion on the catheter was maintained for 72 hours after the surgery and the suppression of the urinary catheter was attempted two times during this period. Both attempts resulted in urinary retention. No pain and no motor weakness of the lower limb were present during this entire period and no other pain medication was administered. When the QL catheter was removed in the third day after surgery, the patient resumed normal bladder functions. She described her experience as challenging because even she did not felt any pain after a surgery considered to be extremely painful, she was afraid that she might

not resume her ability to control voluntary urine passing. As the anaesthetic team was not aware of this possible complication they did not discuss it with the patient prior to surgery.

Discussion

The exact mechanism of action of the QLB analgesia is not completely understood and several mechanisms are possible, including the spread in the paravertebral space or blockade of sympathetic receptors in the thoracolumbar fascia [11-13]. The spread of the local anaesthetic injected was studied both in cadavers and in living subjects [14-17] with conflicting results. It is not clear how the local anaesthetic spreads in a real clinical scenario and what are the factors that can influence it. We performed the TQL block to an obese, intubated, mechanically ventilated female patient in prone position, which was maintained for another two hours after the block was performed. We mounted a QL catheter and we administered continuous infusion of local anaesthetic in the postoperative period. The patient experienced urinary retention, a complication that was not described before in the literature. It is clear to us that the complication was related to the continuous analgesia that we provided, as the patient did not had any other factors known to produce urinary retention and it was resolved when we stopped the infusion and we removed the catheter. It is yet not clear to us whether it was related with the particularity of this case or, contrary to our current beliefs, this is a complication that may appear to all the patients with QLB, but with such a low incidence that it was not encountered or reported before. It is crucial to mention the possible complications of a procedure while obtaining informed consent. Using urinary catheters in orthopedic surgery patients implies an increased risk, as urinary tract infections account for more than 30% of all hospital acquired infections and more than 80% of them are related to unnecessary indwelling urinary catheters [18].

We also observe based on our report that performing TQL block with 30 mL ropivacaine 0.25% was enough in this particular case to allow the incision of the skin and the soft tissues of the thigh, but was not enough to allow painless manipulation of the periosteum. Continuous infusion of ropivacaine 0.2% with a rate of 5 mL/h was enough to provide excellent postoperative analgesia, but produced urinary retention.

We conclude that urinary retention is a possible complication of QLB and continuous QL analgesia, even when is performed unilaterally.

Conflict of interest

Nothing to declare

References

1. Niu X, Xu H, Inwards CY, Li Y, Ding Y, Letson GD, et al. Primary Bone Tumors: Epidemiologic Comparison of 9200 Patients Treated at Beijing Ji Shui Tan Hospital, Beijing, China, With 10 165 Patients at Mayo Clinic, Rochester, Minnesota. Arch Pathol Lab Med. 2015; 139: 1149-1155. doi: 10.5858/arpa.2014-0432-OA
2. Lončarić-Katušin M, Mišković P, Lavrnja-Skolan V, Katušin J, Bakota B, Žunić J. General versus spinal anaesthesia in proximal femoral fracture surgery – treatment outcomes. Injury 2017; 48 Suppl 5: S51-S55. doi: 10.1016/S0020-1383(17)30740-4
3. Dawe H. Modernising Hip Fracture Anaesthesia. Open Orthop J 2017; 11: 1190-1199. doi: 10.2174/1874325001711011190
4. La Colla L, Uskova A, Ben-David B. Single-shot Quadratus Lumborum Block for Postoperative Analgesia After Minimally Invasive Hip Arthroplasty: A New Alternative to Continuous Lumbar Plexus Block? Reg Anesth Pain Med 2017; 42: 125-126. doi: 10.1097/AAP.0000000000000523
5. Parras T, Blanco R. Ensayo clínico aleatorizado comparando bloqueo del plano transverso abdominal con abordaje posterior o bloqueo del cuadrado lumbar tipo I con el bloqueo femoral, ambos guiados con ultrasonidos, para analgesia postoperatoria en fractura de cuello de fémur. Rev Esp Anestesiol Reanim 2016; 63: 141-148. doi: 10.1016/j.redar.2015.06.012
6. Ueshima H, Yoshiyama S, Otake H. The ultrasound-guided continuous transmuscular quadratus lumborum block is an effective analgesia for total hip arthroplasty. J Clin Anesth 2016; 31: 35. doi: 10.1016/j.jclinane.2015.12.033
7. La Colla L, Ben-David B, Merman R. Quadratus Lumborum Block as an Alternative to Lumbar Plexus Block for Hip Surgery: A Report of 2 Cases. A A Case Rep. 2017; 8: 4-6. doi: 10.1213/XAA.0000000000000406
8. Johnston DF, Sondekoppam RV. Continuous quadratus lumborum block analgesia for total hip arthroplasty revision. J Clin Anesth 2016; 35: 235-237. doi: 10.1016/j.jclinane.2016.08.002
9. Sá M, Cardoso JM, Reis H, Esteves M, Sampaio J, Gouveia I, et al. Bloqueio do quadrado lombar: estamos cientes de seus efeitos colaterais? Relato de dois casos. Rev Bras Anestesiol 2017; 68: 396-399. doi: 10.1016/j.bjan.2017.04.023
10. Børglum J, Moriggl B, Jensen K, Lønnqvist PA, Christensen AF, Sauter AR, Bendtsen FT. Ultrasound-Guided Transmuscular Quadratus Lumborum Blockade. Br J Anaesth 2013; 111 (eLetters). doi: 10.1093/bja/el_9919
11. La Colla L, Ben-David B. Quadratus Lumborum Block: Conundrums and Questions. Reg Anesth Pain Med 2017; 42: 127-128. doi: 10.1097/AAP.0000000000000511
12. Ueshima H, Otake H, Lin JA. Ultrasound-Guided Quadratus Lumborum Block: An Updated Review of Anatomy and Techniques. Biomed Res Int 2017; 2017: 2752876. doi: 10.1155/2017/2752876
13. Akerman M, Pejčić N, Veličković I. A Review of the Quadratus Lumborum Block and ERAS. Front Med 2018; 5: 44. doi: 10.3389/fmed.2018.00044
14. Carline L, McLeod GA, Lamb C. A cadaver study comparing spread of dye and nerve involvement after three different quadratus lumborum blocks. Br J Anaesth 2016; 117: 387-394. doi: 10.1093/bja/aew224
15. Adhikary SD, El-Boghdadly K, Nasralah Z, Sarwani N, Nixon AM, Chin KJ. A radiologic and anatomic assessment of injectate spread following transmuscular quadratus lumborum block in cadavers. Anaesthesia 2017; 72: 73-79. doi: 10.1111/anae.13647

16. Elsharkawy H, El-Boghdadly K, Kolli S, Esa WAS, DeGrande S, Soliman LM, et al. Injectate spread following anterior sub-costal and posterior approaches to the quadratus lumborum block: A comparative cadaveric study. Eur J Anaesthesiol 2017; 34: 587-595. doi: 10.1097/EJA.0000000000000680
17. Dam M, Moriggl B, Hansen CK, Hoermann R, Bendtsen TF, Børglum J. The pathway of injectate spread with the transmuscular quadratus lumborum block: A cadaver study. Anesth Analg 2017; 125: 303-312. doi: 10.1213/ANE.0000000000001922
18. Finerty E, Renck H, Griffin P, McDermott M, Lo Basso A. Improving the Management of Orthopedic Surgical Patients with Indwelling Urinary Catheters Using a Systematic Evidence Based Approach. Am J Infect Control 2012; 40: e125-e126. doi: 10.1016/j.ajic.2012.04.219