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Continuous Quadratus Lumborum Block (QLB) for postoperative recurrent and chronic pain. Series of case reports

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Sir,

We would like to report two cases of continuous Quadratus Lumborum Block (QLB) usage for postoperative recurrent and chronic pain treatment. QLB is a method which was reported for the first time in 2007 by Rafael Blanco [1]. It has become popular in recent years as a method providing more efficient and longer postoperative analgesia than Transversus Abdominis Plane Block (TAP) [2] due to the fact, as Blanco has said, that "the extension of local anaesthetic agent beyond the TAP plane to the thoracic paravertebral space after QLB may be responsible for the extent of analgesia and prolonged duration of pain relief" [3]. There are multiple reports of single boluses and continuous infusions of QLB for pain management after total hip arthroplasty [4], laparotomies [5] and other types of surgery. Although there are very few reports [6] concerning the use of QLB for persistent and chronic pain treatment, such application of this method deserves attention.

In two case reports of gynaecology patients presented here, the pain was non-responsive to standard pharmacological treatment. The QLB was performed in aseptic conditions, in an operating theatre by a consultant who was experienced in regional block techniques. We placed bilateral catheters using the QLB II approach (as described by Blanco [3]) under ultrasound guidance (SonoSite X-Porte, convex probe), and employing the in-plane method. We used 20G catheters inserted by 18G Touhy needles. Proper catheter placement was checked by visualisation of a test dose spreading among the tissues.

As the optimal drug dosage, concentration and infusion parameters are unknown, we decided to create a protocol based on postoperative pain treatment used in our hospital with the addition of a single dose of dexamethasone as a probable autonomic nervous system block component.

Protocol:

1. 2 × 10 mL of 1% lidocaine test boluses.
2. bilateral 0.2% ropivacaine infusion with a rate of 5 mL h^{-1} using syringe pumps for 24 h.
3. 2 × 4 mg of dexamethasone bolus.
4. 3-hour break for a pain assessment using the Numerical Rating Scale (NRS).
5. 0.2% ropivacaine infusion using elastomeric pumps with a fixed infusion rate of 5 mL h^{-1} for 48 h.
6. 3-hour break for a pain assessment using NRS.
7. 0.15% ropivacaine infusion, using elastomeric pumps with a fixed infusion rate of 5 mL h^{-1} for the next 48 h.

The patients' pain level was monitored every 4 hours during the whole procedure.

FIRST PATIENT

A 49-year old woman (body mass 60 kg) was re-admitted to the gynaecology department 6 days after a laparoscopic unilateral adnexectomy and grade IV pelvic endometriosis coagulation, due an increasing pelvic pain of up to NRS level 6. On the day of admission, the pain reached NRS level 8 during defecation and miction. There were signs of peritonitis on physical examination and signs of ascites in an ultrasound examination of the abdomen. Diagnostic laparoscopic surgery was performed on the same day. There were 2,000 mL of serous fluid found in the peritoneal cavity with sites of previous endometriosis covered with fibrin, although there was no sign of bleeding or urinary or gastrointestinal damage. The patient received 1,000 mg of metamizole every 8 hours (first dose intravenously, next orally) and 2.5 mg of oxycodone subcutaneously every 3 hours, with no effect. The further diagnostic process included cystoscopy, colonoscopy, gastroscopy, a CT scan of the abdomen, as well as bacteriological tests of blood, urine and peritoneal fluid. All results were negative.

On the 8th day of hospitalization, a consultation was requested with the anaesthetist. Until that time the pain had intensified to NRS level 8 in rest and became constant, reported as "stinging" and "burning" in all over the lower abdomen and pelvic region. The anaesthetist proposed the thermal lesion of the pelvic nerves during the removal of the endometriosis as a pain aetiology, as well as recommending the QLB block [7]. The procedure was performed without any complications, as described above.

During local anaesthetic infusions, pain was NRS level 0. Although on the first postoperative day the pain was assessed as NRS level 5–6, after the third day the pain was "definitely milder" at NRS level 3. We decided to continue the infusion with 0.15% ropivacaine for 48 hours more. Subsequently, the patient reported no pain, assessed at NRS level 0. The QLB catheters were removed and two days later the patient was discharged. During the entire duration of QLB continuous infusion, no motor block was observed.

SECOND PATIENT

A 31-year-old woman (body mass 80 kg) was admitted to the gynaecology department due to exacerbation of Chronic Postoperative Pelvic Pain (CPP). Pelvic pain had appeared after a laparotomy (appendectomy and ruptured right ovarian cyst) 1.5 years before. It was recurrent and did not respond to pharmacological treatment. The patient had

undergone two more surgeries in order to find the origin of the pain, before being diagnosed with CPP and treated with diclofenac 2 × 100 mg, tramadol 37.5 mg + paracetamol 375 mg 3 × 1, ibuprofen 3 × 400 mg, with no effect. On admission, there were signs of peritonitis and lower abdomen/pelvic pain at NRS level 8. Diagnostic laparoscopic surgery was performed. A massive peritoneal, interstitial and uterine adhesion was found, along with a right ovarian cyst. The adhesion was released and the ovarian cyst evacuated without any complications. On the first day after surgery, the pain reached NRS level 9 with a poor response to pharmacological treatment (using the same drugs as in the first case). On the second day after surgery, a consultant anaesthesiologist proposed a continuous, bilateral QLB infusion as in the previous scheme. The patient reported no pain during the infusions (NRS level 0). The pain after 24h of infusion was reported as being NRS level 5, and after 3 days, NRS level 2. There was no pain after 5 days of treatment. The catheters were removed and the patient was discharged home the next day. No motor block was observed during the infusions.

Both patients reported no pain after 1 week, 1 month and 6 months of follow-up; neither did they use any analgesic medication during this period of time.

We used the continuous QLB block method as the last resort in two cases which had been non-responsive to pharmacological treatment. There are many similarities regarding both cases, namely: persistent postoperative pain with a neuropathic component; in the first case due to thermal damage of pelvic area; in the second case, due to mechanical damage of multiple neural endings. Bilateral QLB block could be an alternative to intravenous lidoocaine infusion. The probable mechanism of action of the QLB block in such cases is that the administration of local anaesthetics (LA) blocks pathological impulses from damaged nerve endings. Steroid administration could affect nerve regeneration. The LA of choice is ropivacaine due to its lack of motor blockade in low concentrations, which gives the comfort of full mobility to patients and could lower the risk of thromboembolic disease.

The bilateral, continuous QLB blockade worked surprisingly well and the effect seems to be permanent (6-month follow-up). However, we are aware that this report raises more questions than answers. What is the physiological mechanism of the above-described method? What are the optimal and safe doses and timing? Why did the pain decrease but not disappear after 3 days of infusion and then completely disappeared after 5 days in both cases? Although we undeniably need further studies in order to answer these questions, it seems that the QLB block could be a promising method, not only for postoperative analgesia but also in chronic pain medicine.

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