



Ultrasound-guided quadratus lumborum block for postoperative analgesia in a pediatric patient

Çocuk olguda postoperatif analjezi için uygulanan ultrason rehberliğinde quadratus lumborum bloğu

Gözen ÖKSÜZ,¹ Yavuz GÜRKAN,² Aykut URFALIOĞLU,¹ Mahmut ARSLAN¹

Summary

Quadratus lumborum block is a newly described block providing successful, safe and long lasting analgesia with the guidance of ultrasound. The quadratus lumborum block allows local anesthetic to spread posterior to the quadratus lumborum muscle and expand beyond the middle layer of the thoracolumbar fascia and paravertebral space. We present our experience with the use of unilateral quadratus lumborum block to provide postoperative analgesia in a 3-year-old 14 kg pediatric patient who underwent unilateral inguinal hernia repair. His family was satisfied with the general status and painlessness of the patient.

Keywords: Pediatric; postoperative pain; quadratus lumborum block.

Özet

Quadratus lumborum yeni tanımlanan başarılı, güvenli, ve uzun analjezi sağlayan ultrason rehberliğinde yapılan bir bloktur. Quadratus lumborum bloğu lokal anestezi maddenin quadratus lumborum kasının posteriorundan torakalumbur fasyanın orta katına ve paravertebral alana yayılmasına izin verir. Biz quadratus lumborum bloğu ile başarılı bir postoperatif analjezi sağladığımız tek taraflı inguinal herni operasyonu geçiren 3 yaşında 14 kilo çocuk hastayı sunacağız. Hastanın ailesi hastanın genel durumundan ve ağrısızlığından memnun kaldılar.

Anahtar sözcükler: Çocuk; postoperatif ağrı; quadratus lumborum bloğu.

Introduction

Postoperative pain is an important problem for pediatric patients, their parents and physicians. Pain relief is essential for patient comfort, hemodynamics, and recovery. The combined use of regional and general anesthesia provides long lasting and effective analgesia. In recent years, neuraxial methods used for postoperative analgesia have begun to be replaced by peripheral blocks, which have fewer side effects. Moreover, the use of ultrasound guidance to easily place these novel peripheral blocks has increased their popularity among anesthetists. Among the trunk blocks, quadratus lumborum block (QLB) is one of the most recently described novel blocks.^[1] Although resembling the transversus abdominis plane block, QLB provides analgesia in a wider area

and at a visceral level as the drug is distributed in the paravertebral area.^[2]

Case Report

3-year-old boy weighing 14 kg was scheduled for a right inguinal hernia operation. After discussing with the parents of the patient written informed consent was obtained. Twenty min following oral premedication with 0.3mg/kg midazolam, the patient was taken into the operating room. Intravenous access was opened with a 22-gauge needle, and 1/3 mixed fluid (0.33% NaCl + 3.3% dextrose) infusion was initiated.

Electrocardiogram, heart rate, systolic and diastolic blood pressures, and peripheral oxygen saturation of the patient were monitored, and hemodynamic

¹Department of Anesthesia and Reanimation, Kahramanmaraş Sütçü İmam University Faculty of Medicine, Kahramanmaraş, Turkey

²Department of Anesthesia and Reanimation, Kocaeli University Faculty of Medicine, Kocaeli, Turkey

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Correspondence: Dr. Gözen Öksüz. Kahramanmaraş Sütçü İmam Üniversitesi Tıp Fakültesi, Anestezi ve Reanimasyon Anabilim Dalı, Kahramanmaraş, Turkey.

Phone: +90 - 344 - 280 32 57 **e-mail:** gozencoskun@gmail.com

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data were recorded. The patient was administered 2 mg/kg propofol and 1 microgr/kg fentanyl. Upon loss of eyelash reflex, a laryngeal mask appropriate for the patient's weight was implemented. A mixture of sevoflurane and air/oxygen were initiated for maintenance.

The site of intervention in the patient was cleaned for asepsis, and he was moved to the right lateral position. Then, a high-frequency (6–18 MHz) linear ultrasound probe (Esaote MyLab30, Florence, Italy) was sterilized. Standing posteriorly to the patient, the anesthetist placed the probe horizontally between the edge of the 12nd costal cartilages and the iliac crest. Three muscles of the abdominal wall were viewed, including the external oblique, internal oblique, and transversus abdominis muscles. The probe was slid toward the fascia surrounding the transversus abdominis muscle, and the quadratus lumborum muscle was viewed. The intervention was performed with the in-plane technique using a non-stimulated 22 gauge 80 mm echogenic needle (Pajunk Medical Germany). The needle was advanced from where it crossed the quadratus lumborum muscle toward the thoracolumbar fascia, and 2mL saline was injected. After the fascia was viewed and negative aspiration was made, 0.5 mL/kg of 0.25 bupivacaine (7 mL) was injected.

After the initiation of the operation, the hemodynamic parameters of the patient and the amount of gas delivered were recorded at 5, 10, 15, 20, 30 and 45 min. The patient's unilateral right inguinal hernia operation lasted 55 min. The patient, who was awakened at the end of the operation without problem, was taken to the post-anesthetic care unit. FLACC (face, legs, activity, cry, and consolability) scale values of the patient were 1, 0, and 0 at postoperative 5, 15, and 30 min, respectively. Subsequently, the patient was taken to the ward. The patient who was pain free in the ward, with observed FLACC values of 1, 0, 0, and 0 at postoperative 1, 2, 6, and 12 h, respectively, was discharged 18 hour postoperation. The patient's parent, who was questioned in the ward and via phone at home, reported that the patient used no analgesic syrup (paracetamol or ibuprofen). The patient did not develop nausea/vomiting. His family was satisfied with the general status and painlessness of the patient.

Discussion

QLB was described for the first time in 2007 by Blanco as two separate forms with injection to the posterior and anterolateral sides of the quadratus muscle. The author reported that a block performed at the posterior side quadratus lumborum muscles is safer and more effective in terms of drug distribution in the paravertebral area. Since then, the method has been used for postoperative analgesia in cesarean sections with successful outcomes.^[2]

Blanco et al. reported magnetic resonance imaging study, although calculated local anesthetic volume was too small, posterior quadratus lumborum block was more effective than anterolateral approach. According to the authors, this study supports the paravertebral theory.^[3]

Further, Chakraborty et al. reported a successful postoperative analgesia with continuous QLB through a catheter following nephrectomy surgery performed in a pediatric patient with Wilms' tumor.^[4] In addition, Baidya et al. injected a single dose between the psoas major and quadratus lumborum muscles at a lateral position in five children undergoing pyeloplasty and achieved successful postoperative analgesia.^[5]

Recently a study reported QLB was superior than TAP block for postoperative analgesia in cesarean patients.^[6]

This is the first case report in the literature of quadratus lumborum block in a pediatric patient for inguinal hernia repair. In our patient, we performed the injection at the lateral decubitus position in the posterior side of the quadratus lumborum muscle and achieved a good postoperative analgesia 30 min onward.

More studies are necessary to compare efficiency and applicability of QLB versus TAP block in pediatric patients.

In conclusion, the recently introduced QLB, as a single dose or continuous infusion, may be a good option for abdominal and lower abdominal surgeries in pediatric patients. We believe that if ultrasound-guided QLB is performed by experienced hands, it is a safe and effective technique for postoperative analgesia.

Informed Consent: Written informed consent was obtained from the patient who participated in this study.

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