Iliac fossa block is useful for postoperative analgesia of total hip arthroplasty

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Background : Benefit of combined regional anesthesia during lower-extremity joint operation under general anesthesia have been reported ¹⁾. Conversely, regional anesthesia including a peripheral nerve block presents a risk of nerve injury ²⁾. Here we examined new type of compartment block; iliac fossa block we named, in which a medicinal solution is injected into a site distant from the nerve. To ensure whether this “iliac fossa block” is useful for postoperative analgesia, we conducted a prospective-observational study that we investigated the requirements of fentanyl in intravenous patient-controlled analgesia (IV-PCA).

What is iliac fossa block?

Like an ilioinguinal-iliohypogastric nerve block, the block needle is placed at a site that is around the outer quarter of a line connecting the anterior superior iliac spine and the umbilicus (Figure 1), then punctured in the direction of the iliac bone, penetrating the abdominal transverse muscles. The needle’s point is advanced into the iliac muscle in front of the iliac bone (Figure 2), and then after a negative aspiration test we inject the local anesthetic at this site. Like a conventional fascia iliaca compartment block, the iliac fossa block can block the lateral femoral cutaneous nerve, the femoral nerve and the obturator nerve. In addition, because of the local anesthetic spread to the central side, the block can be expected to act on the lumbar plexus.

Methods

- Subject of this study : Adult patients who were confirmed to undergo total hip arthroplasty (THA) under general anesthesia
- Exclusion criteria : Patients who were contraindicated for regional anesthesia or had neurological disorders, diabetes mellitus, less than 33 kg in body weight
- Anesthesia : General anesthesia at the discretion of each anesthesiologist, but opioids are only fentanyl and remifentanyl
- Block : In the iliac fossa block group (Group B), 40 ml of 0.25% ropivacaine was injected under ultrasound-guidance with a liner probe (6-13 Hz) after the induction of anesthesia (Figure 1,2)
- Control : In the control group (Group C), the block was not used
- IV-PCA : Fentanyl (base: 10 µg/h, bolus dose: 10 µg, lockout time: 5 minutes)
- Outcome : The amount of fentanyl used during each surgery, the requirements of fentanyl as IV-PCA up to 48 hr post-surgery and the block area by cold test after awaking of the patient
- Data and Statistics : The values were mean ± standard deviation, p<0.05 was considered as significant (unpaired t-test or Chi-squared test)

Results

- Demographic data and Patient characteristics are shown in Table 1.
- As for intraoperative dose of fentanyl, there was no significant difference between the two groups (Table 1).
- The cumulative fentanyl requirements at 24 h postoperatively were significantly less in Group B than Group C; 274 ± 46 µg vs. 468 ± 305 µg (p = 0.03), at 48 h were no significant difference; 557 ± 138 µg vs. 788 ± 405 µg (p = 0.05) (Figure 3).
- In the fentanyl requirements from 24 h to 48 h postoperatively, there was no significantly between the two groups (Figure 3).
- The success rate of the block in cold test was 50% in the lateral femoral cutaneous nerve, 40% in the femoral nerve and 20% in the obturator nerve.

Figure 1. Puncture positon in iliac fossa block (left side)

Figure 2. Echo image (left side)

Figure 3. Postoperative fentanyl requirements

Table 1. Demographic data and Patient characteristics

	Group B (n=10)	Group C (n=13)	P value
Age (year)	61 ± 12	60 ± 13	0.46
Sex (male/female)	1/9	5/8	<0.01
Height (cm)	155 ± 6	158 ± 9	0.17
Body weight (kg)	58 ± 11	61 ± 9	0.25
BMI (kg/m ²)	24 ± 5	25 ± 3	0.47
Surgical site (right/left)	3/7	6/7	0.44
Surgical time (minute)	123 ± 43	91 ± 19	0.01
Anesthesia time (minute)	209 ± 53	165 ± 31	0.01
Blood loss (ml)	332 ± 225	273 ± 286	0.30
Intraoperative dose of fentanyl (µg)	208 ± 80	242 ± 61	0.12
Intraoperative dose of fentanyl per body weight (µg/kg)	4 ± 2	4 ± 1	0.29

Values are expressed as the mean ± standard deviation or number
n : number of patients, BMI : Body Mass Index

Conclusion : The postoperative fentanyl requirements were significantly less in the iliac fossa block group, and this block was useful for the postoperative analgesia of THA.

We have no conflict of interest to declare.

References

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