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Letters to the Editor

LETTERS TO THE EDITOR

Erector Spinae Plane Block in Management of Pain After Kidney Transplantation

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Dear Editor,

A 36-year-old man was admitted to the transplant department of the National Research Oncology and Transplantation Center, University Medical Center, for living donor renal transplantation for treatment of chronic terminal renal disease (ESRD). A written informed consent was obtained from the patient and family for this report. The patient had been on a program of hemodialysis for the prior 15 years. He had a history of hypertension, chronic heart failure (NYHA II), and chronic gastritis. A kidney transplantation was performed in the right iliac fossa through a cutaneous and muscular incision 14 centimeters in length. Shortly after successful completion of the renal transplantation and extubation, the patient began to complain of moderate to severe pain in the right iliac area. Our patient initially rated his pain as a 6–7 on a verbal rating scale (VRS) of 0–10 while intravenous fentanyl (0.05 mg/h) was being infused. The patient developed nausea and began to vomit. Seeking an alternative to opioid analgesics (and this patient's demonstrated sensitivity to the side effects), we decided to perform an erector spinae plane block.

With the patient positioned in right lateral decubitus, the skin was sterilized with a 2% chlorhexidine in 70% alcohol solution, and the ultrasound transducer was placed in a transverse orientation to identify the spinous process, lamina, and transverse process. The high-frequency linear transducer was placed on the spinous process at the T8-T9 level, rotated to a cephalo-caudad orientation in the parasagittal plane, sliding it 2.5–3 cm laterally to visualize the transverse process and erector spinae muscle. Using an in-plane technique, the needle tip was sited between the transverse process and the erector spinae muscle. The correct location was confirmed using injection of 3 mL of normal saline to view the hydrodissection between the transverse process and the erector spinae muscle. After verification of proper needle position, 27 mL of ropivocaine 0.25% was injected between the muscle and the transverse process, and extensive cephalo-caudad spread in the correct plane was noted on the ultrasound. Although abdominal innervation has a great deal of crossover, because of the distance of the procedure from the midline, we performed it only unilaterally on the right side. The dose of fentanyl infusion was reduced to 0.025 mg/h and then discontinued entirely after 120 minutes. The block lasted for about 24–26 hours, and afterwards analgesia was maintained by tramadol 100 mg intramuscularly on demand. The procedure was well tolerated, and within several minutes the patient reported onset of pain relief. His reported VRS fell from 4/10 to 0/10 at 60 minutes. Over the ensuing 24 hours, VRS pain intensity remained 0/10. No other analgesics were necessary.

End-stage renal disease (ESRD) is a significant health care problem, with more than 1 million people living on some type of renal replacement therapy (RRT) [1]. Renal

transplantation is currently considered the treatment of choice for a majority of patients with ESRD [2]. However, postoperative pain management, so important not only to patient satisfaction but to enhanced recovery and early mobilization, is problematic in the patient with ESRD [3]. Whereas morphine is the most commonly used drug in the United Kingdom for postoperative pain control [4], its use, like diamorphine, meperidine, and codeine derivatives, is inadvisable in ESRD because of the accumulation of toxic metabolites [5]. And though the use of an alternative opioid such as fentanyl or hydromorphone may well be safer [3,6], in general the use of opioids in patients with renal impairment carries a higher risk of complication. Further, drugs typically used in multimodal postoperative analgesia protocols such as gabapentanoids and nonsteroidal anti-inflammatory drugs are also inadvisable in the renal failure patient. This limitation of analgesic options surely complicates the care of the postoperative ESRD patient. One analgesic option that circumvents these constraints is the use of regional anesthesia. A relatively newly described block, the erector spinae plane (ESP) block performed at a midthoracic level has been shown to provide effective analgesia for abdominal procedures [7,8]. To our knowledge, this is the first report of ESP block for pain management after kidney transplantation. Its greater significance is its demonstration, once again, of the utility of this block and in its demonstration of an excellent analgesic option in the postoperative renal failure patient. The ESP block is a novel technique of regional anesthesia that was recently described by Forero et al. [9] in the treatment of thoracic neuropathic pain. When an ESP block is performed at a lower thoracic level, both somatic and visceral abdominal analgesia can be achieved [7]. Recent publications have suggested that local anesthetic from the erector spinae plane spreads anteriorly into the paravertebral space, effecting blockade of anterior rami and rami communicantes including sympathetic nerve fibers [7,9]. What this means anatomically is that the costotransverse and intertransverse ligaments do not present a meaningful barrier to anterior movement of local anesthetic from the erector spinae plane to the paravertebral space. Potential benefits of this technique include the possibility that it may prove to be easier and more efficient to perform, more reliable, and safer (risk of neuraxial spread, pneumothorax, hematoma), with easier passage of catheter for continuous blockade when compared with traditional paravertebral blockade, but this remains unexamined by direct comparative study. Additional advantages over other regional techniques (quadratus lumborum block or transversus abdominis plane block) include extensive volume of analgesic coverage (from T2 to L3) and possibility of use for numerous types of surgeries (thoracic, abdominal, pelvic) and acute or chronic pain conditions (cervicogenic headache, chronic shoulder pain syndrome, chronic myofascial pain syndrome, facet pain). The ESP block would seem, because it is more superficial, to be a safer block than the paravertebral block, and indeed to date only one complication (pneumothorax) has been reported [10]. However, it remains to be seen how its safety record of complications and side effects will stand up in comparison with other regional techniques.

In conclusion, an erector spinae plane block may be an excellent pain control option after kidney transplantation. A randomized controlled clinical trial appears warranted to assess the efficacy of ESP blockade and compare it with other analgesic options in both kidney transplant surgery and other abdominal surgeries.

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