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Case Report

A New Technique for Superior Hypogastric Plexus Block: The Posteromedian Transdiscal Approach

GURKAN TURKER, ELIF BASAGAN-MOGOL, ALP GURBET, CAGATAY OZTURK,[1] NESIMI UCKUNKAYA and SUKRAN SAHIN

Department of Anesthesiology, and [1]Department of Orthopedics, Uludag University, Faculty of Medicine, Bursa, Turkey

TURKER, G., MOGOL-BASAGAN, E., GURBET, A., OZTURK, C., UCKUNKAYA, N. and SAHIN, S. *A New Technique for Superior Hypogastric Plexus Block: The Posteromedian Transdiscal Approach*. Tohoku J. Exp. Med., 2005, **206** (3), 277-281 —— Superior hypogastric plexus block has been advocated for the treatment of cancer related pelvic pain. Neurolysis is usually established using the classical posterolateral approach in the prone position, in which correct placement of the needle is sometimes difficult due to vertebral anatomy and the patient's inability to lie prone. We describe an alternative posteromedian transdiscal approach under fluoroscopic guidance for the treatment of intractable pelvic pain in three patients, in whom the classical approach was not possible. The L5-S1 interdiscal space was identified with fluoroscopy. The needle was then introduced through the disc and advanced under lateral fluoroscopic control. After verifying correct needle placement, neurolysis was performed with 8 ml of 10% phenol solution. All patients had significant pain relief immediately after the block, lasting from 6 to 12 months, and their pain severity scores and opioid consumption were reduced by more than 50%. There were no complications such as discitis, disc rupture or nerve injury. Since this new posteromedian transdiscal approach provides easy access to the superior hypogastric plexus with a single puncture and with any patient position, it may be an alternative to the classical approach. ———— hypogastric plexus; phenol; block; transdiscal

Cancer patients with extension of tumor into the pelvis may experience severe pain. Oral or parenteral opioids may not only fail to provide relief, but may cause excessive sedation and other side effects. More invasive approaches may thus be needed to control pain and improve the quality of life. Since pelvic cancer pain is visceral in most cases, this could be achieved with percutaneous chemical neurolytic block of the superior hypogastric plexus (SHP) (Plancarte et al. 1990). The plexus is a bilateral retroperitoneal structure situated at the level of the lower third of the fifth lumbar (L5) vertebra and the upper third of the first sacral (S1) one. It is embedded in the subserous fascia between the bifurcation of the common iliac arteries. The plexus supplies the visceral innervation to most of the pelvic structures: descending colon, rectum, and internal genitalia except ovaries and fallopian tubes.

Plancarte et al. (1990) first described SHP

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Correspondance: Gurkan Turker, M.D., Assistant Professor, Uludag University, Faculty of Medicine, Department of Anesthesiology, 16059, Bursa, Turkey.

e-mail: gturker@uludag.edu.tr

block via a two needle posterior approach under fluoroscopic guidance. The iliac crest and L5 transverse process are however potential barriers to needle passage in this classical approach. Waldman et al. (1991) described a single-needle posterior approach with computed tomography guidance, Kanazi et al. (1999) described an anterior approach with fluoroscopic guidance, and Erdine et al. (2003) described a paramedian transdiscal approach. We report a new single puncture posteromedian transdiscal approach, which can be performed with the patient in either the lateral or the prone position.

The Block Procedure

Three patients in whom there were no contraindications for regional block (coagulation abnormalities, local infection, sepsis, mental disorders) or sympathetic blocks (decompensate hemodynamic disorders) were admitted for therapeutic SHP block. They were informed about the procedure and its possible complications, and gave written consent. One gram of cephazolin as a prophylactic antibiotic was given intravenously 30 minutes before the procedure, which were all performed under sterile conditions with C-arm fluoroscopic guidance. Heart rate, non-invasive blood pressure and peripheral oxygen saturation were continuously monitored. Intravenous sedation with 0.05 mg/kg midazolam and 1 μg/kg fentanyl was given, as was 500 ml isotonic saline solution intravenously before and during the procedure.

Method

The new approach can be performed with the patient in the lateral or prone position. The L5-S1 interspace is identified under fluoroscopy, the skin overlying the interspace is prepared with povidone-iodine solution, and sterile drapes are placed. After local anesthetic infiltration of the skin and the subcutaneous tissues with 2% lidocaine, a 20-gauge, 15 cm needle with a 30° short bevel is inserted perpendicularly to the skin at the center of the L5-S1 interlaminar space under anteroposterior fluoroscopic vision. The needle is then advanced toward the intervertebral disc so that it penetrates the thecal sac under lateral fluoroscopic control. After confirming the avoidance of nerve injury by the absence of paresthesia, the tip of the needle is advanced through the intervertebral disc until it exits at its anterior surface (Fig. 1). Correct positioning is confirmed by administration of 4

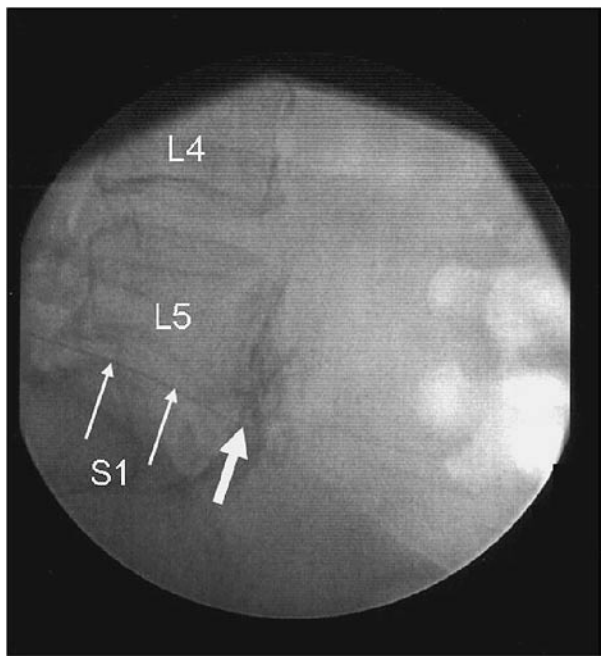

Fig. 1. The final position of the needle tip (*thick arrow*) and the insertion route (*thin arrows*). The tip of the needle is advanced into the intervertebral disc until it reaches the anterior surface of the vertebral body.

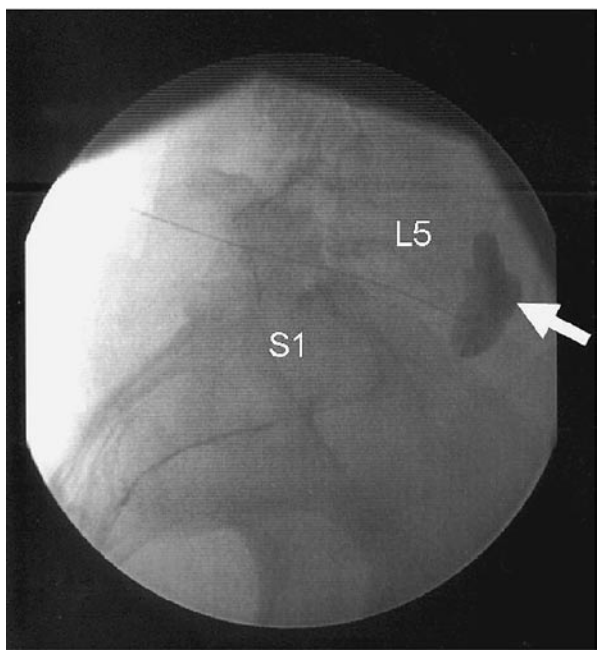

Fig. 2. The lateral fluoroscopic view of the lumbosacral spine shows the location of the contrast medium. The spread of contrast medium can be seen at the anterior surface of the vertebral body (*arrow*).

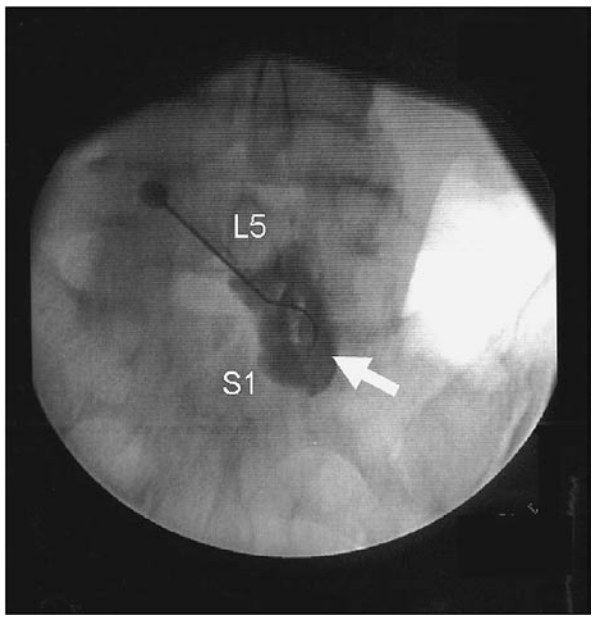

Fig. 3. The anteroposterior fluoroscopic image of the lumbosacral spine shows the location of the contrast medium. The central location of the conrast medium confirms midline position of the needle (*arrow*).

ml of soluble contrast medium (Omnipaque™, Amersham Health, Cork, Ireland) in both lateral and anteroposterior fluoroscopic views (Figs. 2 and 3). A test block with 5 ml 0.5% bupivacaine is then given before the neurolysis is performed with 8 ml of 10% phenol solution. The test block should confirm the reduction of pelvic pain before permanent sympathetic block by phenol. After neurolysis, 0.5 ml of saline is given to avoid the deposition of phenol within the intervertebral disc material. While withdrawing the needle, cephazolin 50 mg in 1 ml is injected into the disc.

Case Reports

Case 1

A 63-year-old man complained of increasing pelvic pain over the past 4 months. He described the pain as sharp, stabbing and localized to the lower abdomen with radiation to the inguinal area, and also complained of tenesmus. He had rectal cancer with metastatic spread in the lymph nodes and soft tissues of the pelvic region. His pain score on the 10-grade visual analogue score system (VAS, ranging from 0 = no pain to 10 = absolutely intolerable pain) averaged 9/10. At admission, he was receiving a daily dose of gabapentin 1,800 mg, amitriptyline 25 mg and intrathecal morphine 15 mg, which not only failed to relieve the pain, but also caused unacceptable side effects including nausea, vomiting and sedation. He was unable to tolerate an SHP neurolytic phenol block via the classical approach in the prone position. We therefore attempted the posteromedian transdiscal approach in the lateral position. The VAS score was reduced to 2/10 after the block, which was performed without any nerve injury, post-spinal headache or infection. Opioid requirements decreased gradually over the next week and he was discharged with adequate analgesia, receiving a daily dose of intrathecal morphine 5 mg and amitriptyline 25 mg. He survived 6 months after the block with good pain relief and no further blocks were required.

Case 2

A 66-year-old woman presented with severe pelvic pain and tenesmus. Six months earlier she had had a total abdominal hysterectomy and bilateral salpingo-oopherectomy for cervical cancer. Her pain was sharp, localized to the right lower abdominal quadrant and also radiating to her right lower back. Her pain score was 7/10. Radiographic imaging showed pelvic metastases. She was initially treated with incremental doses of oral opioids and 25 mg amitriptyline, with a total daily dose of 180 mg morphine sulfate, but the pain and vomiting became intractable. An SHP neurolytic phenol block was attempted, but the classical prone approach had to be abandoned due to intolerable abdominal discomfort. A posteromedian transdiscal approach was therefore used in the lateral position. The pelvic pain and tenesmus gradually disappeared, and the morphine was reduced to 60 mg per day. The pelvic pain recurred 12 months later, and the neurolysis was repeated using the same technique with 10% phenol solution. The patient survived 6 months following the second procedure, with adequate analgesia.

Case 3

A 48-year-old man was admitted with severe

pelvic pain and tenesmus of about two month's duration after abdominal perineal resection and end-colostomy for rectal cancer. Chemotherapy and radiotherapy were also given to treat pelvic metastases. On admission, he was receiving non-steroidal anti-inflammatory drugs, transdermal fentanyl 400 μg/h and amitriptyline 50 mg daily without adequate pain relief; his VAS score was 9/10. Technical problems made the classical approach for SHP block impossible (the iliac crest and L5 transverse process obstructed the advancement of the needle), therefore the posteromedian transdiscal approach was performed in the prone position. After the block, his pain score was 2/10, and the tenesmus also disappeared. His fentanyl consumption decreased gradually to 100 μg/h with adequate pain relief, and he survived 8 months after the block, no further blocks being required.

Discussion

All three patients had a pain score reduction of more than 50% after SHP block, and the pain relief lasted 6 - 12 months, with no early or late complications. Sympathetic neurolysis is effective and safe for the treatment of pancreatic and pelvic visceral pain in cancer, and is a useful adjunct to oral therapy (De Leon-Casasola et al. 1993; Mercadante et al. 2002). It should be offered as an adjuvant to reduce analgesic consumption. However, complete abolition of pain is not possible given that multiple mechanisms are often involved, because progression of the disease can change the underlying pain mechanisms (Mercadante et al. 2002). Opioids have long been used in the treatment of pelvic pain associated with cancer, but tolerance and/or unpleasant side effects can develop. SHP block with neurolytic agents may be useful in such cases and can also decrease opioid consumption. It can significantly reduce pain severity scores and/or decrease opioid intake (De Leon-Casasola et al. 1993; Gundavarpu and Lema 2001; Mercadante et al. 2002; Erdine et al. 2003). De Leon-Casasola et al. (1993) reported a success rate of 69% of patients with pelvic cancer pain. Mean opioid consumption decreased by 67% after the procedure in patients in whom pain relief was adequate, and no further neurolytic blocks were needed during the 6-month follow-up period.

The classical procedure described by Plancarte et al. (1990) is directed to the region where the hypogastric plexus has already divided into its right and left trunks, and thus requires two needles to target both. Waldman et al. (1991) modified the original technique using a single needle with a posterior approach during computed tomography guidance, and observed bilateral spread of the contrast material. Kanazi et al. (1999) published an anterior approach to the SHP, reportedly easier than the posterior approach, but not without risk of damage to anterior structures such as small bowel, bladder and common iliac artery. There is also the risk of infection related to traversing the bowel.

Ina et al. (1992) were the first investigators to report successful SHP block using a paramedian transdiscal approach. This approach has since been used for celiac plexus and lumbar sympathetic block by others (Ina et al. 1996; Ohno and Oshita 1997; Yamamuro et al. 2000), who have regarded it as safe and simpler than other approaches. Discitis is however a possible complication of the transdiscal technique, although the incidence is low (1-2%). Use of a broad-spectrum antibiotic in a single prophylactic dose is recommended whenever the intervertebral disc is entered (Osti et al. 1990; Bajwa et al. 2002). Strict aseptic technique should be used for all procedures performed through the intervertebral discs.

We believe this new approach for SHP block is easier than the classical one described by Plancarte et al. (1990). The technique offers two significant advantages; a single injection is adequate for successful block, and further, the block can be performed in either the prone or lateral position, which is important as patients with pelvic cancer may not be able to assume the prone position. However, a large well-controlled series is needed to establish the safety and efficacy of this new approach compared to the classical one.

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