An Unusual Complication After Ganglion Impar Block for Chronic Cancer Pain Management

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Patients with advanced pelvic malignancies present with pain of varying severity. Their pain can be effectively managed using a systemic pharmacologic approach, including oral administration of morphine. However, morphine can lead to constipation, which may be especially troublesome in patients with rectal carcinoma. Neurolytic blocks such as of the ganglion impar may alleviate sympathetically mediated pain and help in reducing opioid requirement. However, use of a ganglion impar block may rarely be associated with side effects such as rectal puncture, neuritis, and cauda equina syndrome. We report a rare neurologic complication after a fluoroscopic-guided ganglion impar block.

Keywords: Ganglion impar block, malignancy, pain.

Patients with advanced rectal carcinoma may have severe pain mandating the use of opioids. However, opioids in higher doses may have associated side effects such as constipation, which may be undesirable in patients with rectal carcinomas. Those having pain refractory to opioids or who experience intolerable side effects due to opioid treatment can benefit from interventional nerve blocks. The ganglion impar is an unpaired ganglion located at the level of the sacrococcygeal junction in the front of the coccyx and consists of the end of the sympathetic chains on both sides. It is linked with pain originating from blood vessels, nerves, and other tissues, such as the lower third of the rectum and anus, the perineum, the urethra, the vagina, the vulva, or the scrotum. Therefore, sympathetically mediated perineal visceral pain in patients with rectal malignancies may be treated effectively with ganglion impar block. Several techniques for performing ganglion impar block have previously been reported. Various complications, such as bleeding, infection, perforation of the rectum and/or bowel, bladder incontinence, hematoma, and nerve root injury, have been associated with ganglion impar block. The transsacrococcygeal approach for a ganglion impar block was first described by Wemm and Saberski. A fluoroscopic-guided transsacrococcygeal technique remains the most popular choice because of its technical feasibility and reduced risk of visceral injuries compared with a conventional technique. We report a rare neurologic complication after a fluoroscopic-guided transsacrococcygeal ganglion impar block.

Case Summary
A 30-year-man with advanced rectal carcinoma presented to the pain clinic with severe pain in the lower aspect of the abdomen and the perineal region for the past month. His pain was burning and nonradiating, increased during defecation, and had a numeric rating score (NRS) of 10 of 10 during defecation. The patient had inadequate pain relief with oral ibuprofen, 400 mg 3 times a day; paracetamol, 1,000 mg 3 times daily; and tramadol, 100 mg 3 times a day. The persistent pain affected his quality of life including poor sleep and decreased appetite. His computed tomography (CT) scan was screened for potential space in the presacral area for the possibility of performing a ganglion impar block. In view of inadequate pain relief with drug therapy, the intervention of fluoroscopic-guided ganglion impar block was discussed with the patient, and he consented.

The patient was admitted and was kept fasting for 8 hours for solids and 2 hours for clear liquids before the procedure. He was transferred to the procedure room, and a pulse oximeter and noninvasive blood pressure monitor were attached. The patient was placed in the prone position, and his back was prepared under sterile conditions. With the use of anterior-posterior and lateral fluoroscopic guidance, the sacrococcygeal junction and tip of coccyx were identified. A transsacrococcygeal approach was used to block the ganglion impar. After local infiltration using 3 mL of 2% lidocaine via a 26-gauge hypodermic needle, an 18-gauge, 3.8-cm (1.5-in) needle was inserted through the sacrococcygeal ligament in the midline. We used the loss of resistance method and advanced the needle through the vertebral disc until the needle tip was placed anteriorly to the ventral sacrococcygeal ligament. After confirmation of correct needle position by fluoroscopy, 1 mL of nonionic contrast dye.
was injected, which spread evenly in a linear manner just anterior to the sacrococcygeal joint (Figure). Thereafter, 6 mL of 0.25% bupivacaine with 50% alcohol and 40 mg of triamcinolone was injected after negative aspiration. The patient tolerated the procedure well and was transferred to the recovery room on the shifting trolley.

The patient’s pain decreased from a baseline NRS of 10 to less than 3. After 3 hours, the patient experienced sudden-onset, severe pain in the right thigh and difficulty in moving his limb. The increased pain was attributed to the delayed response of the alcohol in the block. A 3-mg intravenous bolus of morphine was administered, which was followed by a 0.5 mg/h infusion of morphine for analgesia. This morphine infusion was titrated to the patient's response and increased to 2 mg/h. He also complained of loss of bowel and bladder control. Results of the neurologic examination revealed a normal motor strength and reflexes. However, the patient had an approximately 50% decrease in touch sensation beyond the L3 dermatome and had antalgic gait with limping while walking. Treatment was started with 8 mg of intravenous dexamethasone twice a day. A nerve conduction study was completed, with normal results. The patient was kept under observation, and his motor and sensory function was monitored by repeated neurologic examination. His CT scan was again reviewed, and it revealed that the tumor mass extended until the lateral pelvic wall, but the presacral space was cancer free.

His pain settled (NRS 3) with the morphine infusion, which was converted the next day to oral morphine, 25 mg every 4 hours (immediate-release preparation). His bowel and bladder complaints were also decreased in severity, and the paresthesia was limited to the sacral nerve roots now. Over the next 24 hours, the patient regained his bowel and bladder function and was left with only mildly decreased sensation in a toe (S1 dermatome). On the second day, he started walking normally, with no loss of sensations.

Subsequently, the patient was discharged on an oral regimen of morphine, 25 mg every 4 hours; gabapentin, 300 mg 3 times daily; and ibuprofen, 400 mg 3 times a day. The patient was advised to follow up with his medical oncologist and the pain clinic for further management. On subsequent visits, the oral morphine dosage was tapered to 5 mg every 4 hours. The patient remained symptom free and had adequate pain control.

**Discussion**

The neurologic complication of sensory loss and bladder and bowel involvement after neurolytic ganglion impar block has not been reported earlier, to our knowledge. The ganglion impar, also known as the ganglion of Walther or the sacrococcygeal ganglion, is a singular retroperitoneal structure formed by both sympathetic chains and is located at the level of the sacrococcygeal junction. The fusion of the 2 chains typically positions the ganglion midline, which makes it relatively easy to find. However, there is a wide range of variability in the anatomical location, and the ganglion impar may be located lateral to the midline on either side with respect to the sacrococcygeal junction. The indications for blockade of the ganglion impar are primarily treatment of pelvic and perineal pain with a substantial sympathetic component.

The block has been administered through different approaches, including the transsacrococcygeal ligament approach, transsacrococcygeal joint approach, paramedial approach via anococcygeal ligament, and paracoccygeal corkscrew approach. The block can be administered with the patient in the prone, lateral, or lithotomy position. The original technique of ganglion impar block was first described by Plancarte et al, who used fluoroscopic-guided
placement of a bent 22-gauge spinal needle introduced through the anococcygeal ligament and directed to lie with its tip retroperitoneally at the sacrococcygeal junction.

The visualization technique for ganglion impar block includes conventional anatomical, fluoroscopic guidance, ultrasonographic guidance, or CT guidance. The needle required for the block may be a curved needle or a needle-inside-needle technique. Of the visualization techniques, fluoroscopic-guided transcoccygeal remains the most popular approach because of its simplicity and effectiveness. We followed this technique in our patient because of the ease with which this procedure can be performed and because the complications are relatively rare. Reported complications such as bleeding; neurolytic injection into the nerve roots; and unintentional nerve root injection leading to neuritis, paresthesias, and numbness have been reported in patients receiving ganglion impar block. Cauda equina syndrome following neurectomy injection into the nerve roots; and unintentional nerve root injection leading to neuritis, paresthesias, and numbness have been reported in patients receiving ganglion impar block. Cauda equina syndrome following ganglion impar block is rare and has not been described to date, to our knowledge. Our patient had a transient loss of sensation in the lower lumbar and sacral dermatomes, which improved over 48 hours. Also, the nerve conduction study had a normal result, which ruled out any peripheral lesion leading to the condition.

In our case, the possible cause of the reversible sensory loss after the block is unclear. The anatomical variability of the ganglion impar could be a possible cause of the neurologic deficit. However, we could not confirm this by detailed imaging because our patient had advanced cancer and was not willing to undergo further imaging. A misplaced injectate or an unintentional bleeding due to the procedure may have resulted in an epidural hematoma leading to cauda equina syndrome. However, these are unlikely causes because the procedure was done under fluoroscopic guidance, there was a good spread of the dye (Figure), and the drug was injected slowly after ensuring negative aspiration (checking for any blood) after every 2 mL.

We think that a possible spillage of the injected drug (alcohol and bupivacaine) near a few nerve roots during its placement at the presacral space led to the problem. Fluoroscopic-guided drug injection was performed, but some drug may have permeated into the surrounding nerve roots, leading to sensory loss at specific dermatomal regions. Although not apparent in our case, the presence of tumor mass extension until the lateral pelvic wall may have also caused anatomical distortion leading to inadvertent drug distribution and consequent neurologic complications.

We give a combination of a neurolytic (50% alcohol), corticosteroid (triamcinolone), and local anesthetic (0.25% bupivacaine) for our ganglion impar blocks. The addition of steroid has an anti-inflammatory effect, and bupivacaine reduces the pain due to neurolysis. We think that the addition of a steroid during the neurolytic block and intravenous dexamethasone supplementation reduced the inflammation and subsequent spinal cord edema. Also, possible drug dilution during penetration prevented permanent damage and probably helped in early neurologic recovery. A detailed search of the literature did not reveal such a complication. The block was successful, as evidenced by the fact that his pain resolved and the oral morphine dosage was decreased.

In conclusion, transient neurologic deficit may occur during neurolytic ganglion impar block for relief of pain due to carcinoma of the rectum. Prevention of any permanent neurologic insult after a ganglion impar block requires great vigilance and monitoring.

REFERENCES


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DISCLOSURES

The authors have declared no financial relationships with any commercial entity related to the content of this article. The authors did not discuss off-label use within the article.