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## Transient Neurologic Toxicity after Spinal Anesthesia, or Is It Myofascial Pain? Two Case Reports

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THERE have been several publications of “transient neurologic toxicity” or “transient radicular irritation” attributed to intrathecal local anesthetics. Most described cases involved the use of hyperbaric lidocaine, 2–5%. Sumi *et al.*<sup>1</sup> recently reported a case in which tetracaine, 0.5%, was used. Reported cases present with low back or buttock pain radiating to the thighs or lower legs. The pain is usually moderate to severe, appearing 1–24 h postoperatively after recovery from an otherwise uneventful spinal anesthetic. In all reported cases, the symptoms disappeared within 1 week. We report two cases of similar symptoms and circumstances that have the appearance of simple musculoskeletal pain.

### Case 1

A 30-yr-old man with chondromalacia of the right patella was scheduled for an arthroscopy and débridement. With the patient in the right lateral decubitus position, the lumbar area was prepped with an iodine-containing solution, draped, and the skin wiped dry. A skin wheal was raised using 2 ml of lidocaine, 1%, solution at the L4–L5 level using sterile technique, and a 25-gauge Quincke needle was used to obtain free-flowing, clear cerebrospinal fluid (CSF), on the first attempt. After adequate backflow was confirmed, 70 mg (1.4 ml) of 5% MPF-lidocaine in 7.5% dextrose (Hyperbaric Xylocaine®, Astra Pharmaceuticals, Westborough, MA) was injected over approximately 30 s. No paresthesias were elicited during needle insertion or injection of local anesthetic. Adequate anesthesia was obtained with a T10 sensory level. During surgery lasting 1 h, the patient was in the supine position. After an uneventful intraoperative and postanesthesia care unit (PACU) course, the patient was discharged home. On routine telephone call follow-up evaluation on postoperative day 1, the patient indicated that he was doing well, although later that day (approximately 24 h after the anesthetic), the patient called to complain of excruciating low back pain with paresthesias radiating to both legs. At that time, he was asked to come to our pain clinic for evaluation and treatment. The pain was confirmed to be in the lower back/buttocks area and radiating down both legs. The leg pain was noticed not to involve the feet. Results of Lasègue's test were negative. Because of the severity of symptoms, magnetic resonance imaging (MRI) was performed to rule out a structural lesion. Results of the MRI were negative. A diagnosis of myofascial low back pain with six active paraspinal muscle trigger points was made. This was confirmed by infiltrating a solution of 0.25% bupivacaine/0.5% etido-

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caine with dexamethasone, 0.4 mg/ml, in the six identified trigger points (3 ml each). There were no sensory or motor blocks associated with the injection, which provided the patient with 100% pain relief within 10–15 min. He required two more visits for the same injections with similar results and with a duration of relief of 1–2 weeks at a time. Stretching exercises for the back muscles, combined with the myoneural injections, helped the condition disappear by his third follow-up visit.

## Case 2

A 36-year-old man, who was previously involved in an industrial accident and had required placement of a tibial intramedullary rod for delayed union, was scheduled for removal of retained hardware. The patient had a history of opioid addiction and cocaine abuse but had gone through drug detoxification and was in a drug rehabilitation program. The patient also had a history of occasional low back pain and headaches. With the patient in the sitting position, the lumbar area was prepped using an iodine-based solution, draped in the usual manner, and the skin blotted dry.

A skin wheal and infiltration at the L4–L5 level was performed using lidocaine, 1%. A 27-gauge Whitacre needle was passed *via* an 18-gauge introducer to obtain free-flowing, clear CSF, without paresthesias or blood on the first attempt. A solution of 1.4 ml of 5% MPF-lidocaine (70 mg) in 7.5% dextrose was mixed with an equal volume of clear CSF to obtain a hyperbaric lidocaine, 2.5%, mixture. This was injected over approximately 30 s and resulted in a T10 sensory level and good surgical anesthesia. The surgery was uneventfully conducted with the patient in the supine position. The patient recovered fully and was discharged home. On postoperative day 1, the patient called complaining of low back pain radiating to the popliteal fossae but reported no leg weakness or numbness or bowel or bladder dysfunction. The patient was subsequently referred to the pain service about 2 weeks postoperatively for persistent lumbosacral pain. A diagnosis of myofascial pain with two active paraspinal muscle trigger points was made and confirmed by complete resolution of symptoms after injection using our bupivacaine-etidocaine-dexamethasone solution. Symptoms resolved within 10–15 min after the injection, which did not cause any sensory or motor blockade.

## Discussion

Myofascial trigger points of the gluteus minimus muscle refer pain down the lateral and posterior aspects of the lower limbs.<sup>2</sup> These patterns may extend to the ankle,<sup>3–8</sup> but never beyond it, sparing the feet.<sup>2</sup> This pain pattern includes most of the buttock and the posterior aspect of the thigh and calf. Other authors have shown the relationship between the piriformis syndrome with pain in the buttock<sup>9–11</sup> and down the back of the thigh.<sup>10,12–14</sup> The piriformis muscle refers pain to the buttock and over the hip joint posteriorly. This referred pain sometimes extends over the proximal two thirds of the posterior thigh. Finally, the thoracolumbar paraspinal muscles, specifically the iliocostalis lumborum and the longissimus thoracis, refer pain mainly

downward.<sup>7</sup> Myofascial trigger points of the low thoracic region in the longissimus thoracis muscle refer pain low in the buttock.<sup>7,15</sup> Some of the earliest work in mapping referred pain patterns from the erector spinae muscle was done by Kellgren,<sup>16</sup> who experimentally injected hypertonic saline solution into normal muscles. He found that hypertonic injection of the deep muscles at the L5 level referred pain down the posterolateral aspect of the thigh and leg.

Back pain can occasionally take place after an uneventful anesthetic. Flatten<sup>17</sup> reported a 55% incidence of back pain in outpatients, and Perz<sup>18</sup> noted an incidence of 32% with one fourth of these patients reporting their back pain as severe. This result was found to be irrespective of the type of anesthetic.

There has been a recent increase in case reports,<sup>1,19,20</sup> letters,<sup>21,22</sup> and prospective studies<sup>23</sup> of “transient neurologic toxicity” caused by agents used since 1947.<sup>24</sup> Most cases described did not present any sensory, motor, or muscle-tendon reflex abnormalities. They also did not involve bladder or bowel dysfunction or a positive Lasègue’s test. Although experimental neurologic damage has been observed with local anesthetics,<sup>25</sup> studies<sup>19</sup> suggest that other factors, such as local anesthetic maldistribution, might predispose to these neurotoxic concentrations.

In our two cases, we were able to obtain 100% relief of the pain within minutes of a local anesthetic injection into affected muscles. Although our injectate contains dexamethasone, it is unlikely that this was the mechanism for pain relief because it takes longer than 10–15 min for the steroids to cause any effects. Because the myoneural injections were made in the posterior paraspinal compartment and because no sensory or motor block was observed, it is evident that the local anesthetic did not make it into the intrathecal space or the lumbar plexus.

Because none of the reviewed cases were evaluated for muscle problems as a source of pain, it is possible that myofascial pain could be a factor in the reported back and leg symptoms, in some of these patients. We would caution against the liberal use of the “neurologic toxicity” label in patients with no positive neurophysiologic studies such as peripheral nerve conduction velocities or electromyograms, especially in light of subjective symptoms that are more classical indicators of myofascial pain syndromes than actual radiculopathy or peripheral neuropathy. Postoperative low back pain is more likely to be multifactorial, with a strong relationship to patient position (*e.g.*, lithotomy) or previous history of



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occasional low back pain. More recent double-blinded, prospective studies by Pollock *et al.*<sup>26</sup> and Hampl *et al.*<sup>23</sup> suggest a definite greater incidence of low back pain and leg pain with the use of intrathecal lidocaine compared with bupivacaine. Although there is no question that there is an incidence of chemical neuropraxia with the use of local anesthetics, this incidence, currently reported between 16%<sup>26</sup> to 37%,<sup>23</sup> might be falsely high because of the failure to diagnose myofascial pain.

Although our two cases may not be a fair representation of postspinal complications, they note the possibility of myofascial pain and active trigger points as a contributing factor to postoperative low back and leg pain.

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