

Postsurgical inflammatory neuropathy- An unsought occurrence after surgery

Dear Editor,

Postoperative peripheral nerve injuries are uncommon (around 0.03%), self-limiting, and most of the time can be managed conservatively with no serious permanent neurological deficit. The predisposing factors are male gender, obesity, presence of diabetes mellitus, peripheral vascular diseases, elderly patients, pre-existing neurologic

diseases, alcoholism, tobacco users, presence of arthritis, and abnormal positionings.

When the common causes like transection, compression, and traction are ruled out, clinicians should consider postsurgical inflammatory neuropathy (PIN) which is an immune-mediated inflammation. This needs evaluation using nerve conduction studies (NCS), electromyography (EMG), and a nerve biopsy. A biopsy typically reveals epineurial and endoneurial perivascular inflammation, and nerve microvasculitis. If treated in less than 4 weeks with high-dose immunotherapy i.e., intravenous (IV) corticosteroids (methylprednisolone),

the irreversible damage could be prevented. Table 1 summarizes the details of reported cases with PIN.

Staff *et al.*^[4] reported 21 cases of biopsy-confirmed and 12 cases of clinically suspected PIN. Out of 21, 17 patients were treated with immunotherapy.^[1] In a series of five biopsy-proven patients with PIN, Rattanan *et al.*^[5] treated them with IV corticosteroid with favorable outcomes. Except for patient 2, all four patients showed complete resolution of neuropathy on follow-up. Godlewski *et al.*^[1] reported PIN in a patient who underwent a redo left total hip arthroplasty (THA) under preoperative quadratus lumborum block (QLB) and general anesthesia. On the first postoperative day (POD), she presented with 0/5 quadriceps strength which persisted after 7 weeks. NCS and EMG were consistent with a subacute left lumbosacral radiculoplexus neuropathy with more severe involvement of the femoral nerve. She did not receive IV corticosteroids and was managed conservatively.

Ahn *et al.*^[2] reported a case of PIN in a 17-year boy with end-stage Legg-Perthes disease who underwent bilateral THA under epidural and general anaesthesia. Starting from the 1st POD, the patient had bilateral foot numbness and weakness which persisted on POD 3 even after epidural

catheter removal. Magnetic resonance imaging (MRI) was negative for a neuraxial hematoma or abscess. EMG performed on POD4 revealed bilateral reduction in L5-S1 motor amplitude with no voluntary motor unit activity in L5-S1 innervated muscles. After 3 weeks, EMG revealed severe bilateral subacute lumbosacral plexopathy with ongoing active uncompensated denervation. Considering PIN, high dose IV corticosteroid was started for 4 weeks. MRI done at 6 weeks was consistent with PIN along hamstrings, gluteus maximus, and lumbosacral plexus. Left ankle sural nerve biopsy demonstrated inflammatory neuropathy. He had a significant neurological deficit even after 8 months of surgery.

Laughlin *et al.*^[3] published their series of seven patients who underwent hip surgeries and presented with ipsilateral weakness and unexplained pain in less than 1 month. The patients were treated with IV methylprednisolone and out of seven, six patients showed improvement during a follow-up at 6 months.

To conclude, PIN although rare can have disastrous outcomes if not diagnosed and treated on time. Whenever in doubt, it is advisable to get NCS, EMG, and nerve biopsy done and involve a neurologist in the patient's care.

Table 1: Depicts the summary of published articles which encountered and managed postsurgical inflammatory neuropathy

Authors/year (number of patients)	Injuries encountered	Nerve biopsies done	Outcome
Staff <i>et al.</i> /2010 ^[4] (33 patients)	Brachial plexus neuropathy, lumbosacral radiculoplexus neuropathy, sciatic neuropathy, sensory demyelinating polyneuropathy	Sural, superficial radial, lateral antebrachial, superficial peroneal, sciatic fascicular	17 patients were treated with immunotherapy. In 13 patients who were consistently followed-up there was improvement in neuropathy.
Ahn <i>et al.</i> /2011 ^[2] (1 patient)	Severe bilateral subacute lumbosacral plexopathy with ongoing active uncompensated denervation on EMG	None	Although the symptoms improved with corticosteroid, he had significant neurological deficit even after 8 months of surgery.
Laughlin <i>et al.</i> /2014 ^[3] (7 patients)	lumbosacral radiculoplexus neuropathy, lumbar plexopathy, sciatic neuropathy, sciatic with femoral neuropathy	Superficial fibular, sural, saphenous	Six out of seven patients improved
Rattanan <i>et al.</i> /2014 ^[5] (5 patients)	bilateral nonlocalizable peroneal neuropathies with active denervation., left sciatic mononeuropathy with active denervation right sciatic neuropathy affecting predominantly the right common peroneal nerve branch with active denervation left sciatic mononeuropathy with active denervation bilateral, severe, active axonal sensory-motor neuropathy	Superficial peroneal nerve, Sural nerve	Cases 1 , 3, 4, 5- complete resolution Case 2- no improvement at 4 months.
Godlewski <i>et al.</i> /2020 ^[1] (1 patient)	Left lumbosacral radiculoplexus neuropathy with more severe involvement of the femoral nerve.	No	At 7 weeks: hip flexion, knee extension, ankle dorsiflexion, hip abduction, and knee flexion were affected with preserved hip adduction and ankle plantar flexion

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Conflicts of interest

There are no conflicts of interest.

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