Case Report

Chemical Lumbar Sympathectomy for Lower Limb Rest Pain Associated with Thromboangiitis Obliterans

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Abstract

Thromboangiitis obliterans (TAO) is often misdiagnosed and hence, there is enormous suffering by patients. Surgical options are limited in the management. Most of the drugs used for medical management do not alleviate pain or help in the healing of ischemic ulcer. Chemical lumbar sympathectomy (CLS) can help patients by relieving pain and improving blood flow to the affected area. It is a therapeutic option performed under local anesthesia with relatively less morbidity. Although the drugs used can cause neuritis, sympathectomy is a better option. Proper diagnosis and accurate neurolytic block helps in relieving patient suffering. A 30-year-old chronic smoker diagnosed to have TAO of the right lower limb underwent CLS with alcohol. The patient had good pain relief.

Key words: Alcohol, neurolysis, sympathectomy, thromboangiitis obliterans

Introduction

Thromboangiitis obliterans (TAO) or Buerger's disease is a peripheral vascular disease caused by progressive inflammation and thrombosis of small- and medium-sized arteries and veins of the extremities.[1] The management of these patients with unreconstructable distal vessel disease with rest pain and ulcers has always been difficult with the obvious end point being limb amputation. Attempts to improve the quality of life by alleviating rest pain and augmenting revascularization have led to the development of chemical lumbar sympathectomy (CLS).[2,3]

Case Report

A 30-year-old male patient, a chronic smoker, presented to the emergency department with a history of post–traumatic nonhealing ulcer, severe rest pain, and blackish discoloration of the first, second, and third toes of his right foot for the past 6 months with difficulty in walking for the past 10 days. The patient had consulted different doctors and was given different modalities of treatment without any improvement in the pain or ulcer healing. Later, he was referred to a pain clinic.

Local examination of his right foot revealed a foul smelling ulcer on the dorsum with pus discharge and gangrene of the first, second, and third toes, coolness of the distal part of the right foot, absent anterior tibial, posterior tibial, and dorsalis pedis artery pulsations.

His hematological, biochemical, and coagulation profiles were normal except for the elevated total count. Electrocardiogram (ECG) was also normal.

Right lower limb arterial Doppler showed monophasic flows in the anterior tibial, posterior tibial, and dorsalis pedis arteries.

A diagnosis of Buerger's disease or TAO was made from the above data. As reconstructive surgery was not feasible for this patient, he was advised CLS.

Procedure

After obtaining written informed consent, the procedure was performed in the operation theater. Intravenous line was secured. Patient monitoring included ECG, noninvasive blood pressure, and pulse oximetry. The patient was placed in a prone position and supported with pillows. The procedure was performed under aseptic precautions and C-arm fluoroscopic guidance. A point 7 cm lateral to the midline at the level of third lumbar vertebra (L3) was marked on the right side and the skin was infiltrated with 2 mL of 2% Xylocaine. A 22-gauge, 7-inch Quincke spinal needle (Becton Dickinson India Pvt. Ltd, Gurgaon, Haryana, India) was advanced from this point toward the anterolateral border of the L3 vertebral body. Needle tip position was confirmed by injecting 1 mL of Urografin dye under fluoroscopic guidance; longitudinal

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spindle-shaped spread of the dye was noted [Figure 1]. After negative aspiration, test dose was given using 3 mL of 2% Xylocaine with adrenaline (1:2 lakh) and then waited for 5 min to confirm the absence of sensory or motor deficits. Neurolytic agent (7 mL of absolute alcohol and 3 mL of 0.5% bupivacaine) was injected with repeated negative aspirations. The needle was flushed with 0.5 mL of 2% Xylocaine with adrenaline before withdrawal. The procedure was uneventful. Local rise of temperature in the right leg and venodilatation were noted within a few minutes of injection. The patient also reported 60% pain relief 10 min after the procedure. On follow-up the next day, the patient had about 80% pain relief and informed us that he had a sound sleep the previous night after many weeks.

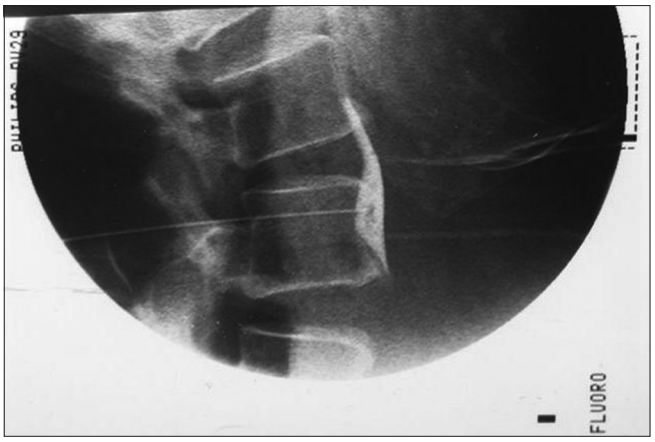

Figure 1: Fluoroscopic view (lateral) showing sympathetic chain

Discussion

The spinal contribution to the sympathetic chain ends at L2 but the sympathetic chain continues to the coccyx, ending with the ganglion impar. The lumbar sympathetic chain is located in the anterolateral portion of the vertebral bodies bilaterally. The sympathetic contribution to the lower extremity arises from the cell bodies originating in the anterolateral horn of the spinal cord from T10 to L2. The segment of the sympathetic chain that carries the sympathetic fibers to the lower extremities resides alongside L2, L3, and L4 vertebral bodies bilaterally. In the lumbar region, the psoas muscle separates the sympathetic chain from the somatic nerves.

The diagnosis of TAO in the younger age group requires a high degree of suspicion. Eliciting proper history, clinical examination, and tests like Doppler evaluation can help in confirming the diagnosis.

Even though CLS is a well-known therapeutic intervention, it is practiced less commonly;[4] hence, we are reporting this case.

CLS decreases pain by interrupting sympathetic-nociceptive coupling and by a direct neurolytic action on nociceptive fibers. It acts as a vasodilator by decreasing the sympathetic tone improving tissue oxygenation and healing the ulcer. Phenol (3-12%) and ethyl alcohol (25-100%) are the commonly used agents for chemical neurolysis.[5] These agents are thought to act by causing Wallerian degeneration of the nerve fiber by means of protein denaturation and destruction of myelin sheath. Alcohol is considered advantageous for neurolysis as it spreads well with a higher success rate even though the incidence of neuritis can be higher. Ultralong acting non-neurolytic local anesthetics are currently being examined and offer an exciting new approach to this technique.[5]

Outcome is assessed by the local rise of temperature, venodilatation, and relief of pain. The other mentioned tests are change in sympathogalvanic response (increased resistance >13%), sweat tests (ninhydrin, cobalt blue, and iodine starch), etc.

There are many techniques described for the block, usually done under fluoroscopic guidance and rarely computed tomography (CT)-guided. They are the paramedian approach, lateral (Reid's) approach, transdiscal approach, and oblique (tunnel vision) approach. We used the paramedian approach, which is the commonly used technique.

Indications of lumbar sympathetic block are vascular insufficiency, sympathetically mediated pain (reflex sympathetic dystrophy and causalgia), phantom limb pain, peripheral neuropathies, and postherpetic neuralgia.

Contraindications are local infection, coagulation/platelet dysfunction (pathological/drug induced), and patient refusal.

Complications include epidural/spinal block, intravascular injection, puncture of aorta/inferior vena cava, hematoma, backache (injection into paravertebral muscles), injury to intervertebral disc, kidney and ureteric traumas, genitofemoral neuralgia, lumbar plexus block, retrograde ejaculation/failure of ejaculation, and infection.

Conclusion

CLS is a relatively inexpensive and minimally invasive procedure. It has a great role in the management of peripheral vascular disease of the lower limbs not amenable to surgical reconstruction. Proper history and evaluation help in the correct diagnosis of TAO. CLS should be considered as an alternative to amputation for symptomatic patients with critical leg ischemia. It helps in ulcer treatment by augmentation of revascularization and improvement in rest pain and thus, enhances the quality of life. Proximity to the vital structures makes careful attention to the technique mandatory.

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