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CLINICAL INFORMATION

Neurolitic block of the lumbar sympathetic chain improves chronic pain in a patient with critical lower limb ischemia



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Intractable pain;
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Abstract

Background and objectives: Sympathectomy is one of the therapies used in the treatment of chronic obstructive arterial disease (COAD). Although not considered as first-line strategy, it should be considered in the management of pain difficult to control. This clinical case describes the evolution of a patient with inoperable COAD who responded properly to the lumbar sympathetic block.

Case report: A female patient, afro-descendant, 69 years old, ASA II, admitted to the algology service due to refractory ischemic pain in the lower limbs. The patient had undergone several surgical procedures and conservative treatments without success. Vascular surgery considered the case as out of therapeutic possibility, unless limb amputation. At that time, sympathectomy was indicated. After admission to the operating room, the patient was monitored, positioned and sedated. The blockade was performed with the aid of radiology, bilaterally, at L2–L3–L4 right and L3 left levels. On the right side, at each level cited, 3 mL of absolute alcohol with 0.25% bupivacaine were injected without vasoconstrictor, and on the left side only local anesthetic. The procedure was performed uneventfully. The patient was discharged with complete remission of the pain.

Conclusion: Neurolitic block of the lumbar sympathetic chain is an effective and safe treatment option for pain control in patients with critical limb ischemia patients in whom the only possible intervention would be limb amputation.

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PALAVRAS-CHAVE

Dor intratável;
Isquemia;
Tratamento

Bloqueio neurolítico da cadeia simpática lombar melhora dor crônica em paciente portadora de isquemia crítica de membro inferior**Resumo**

Justificativa/objetivos: A simpatectomia é uma das terapêuticas usadas no tratamento da doença arterial obstrutiva crônica (DAOP). Embora não seja considerada como estratégia de primeira linha, deve ser lembrada no manejo dos quadros de dor de difícil controle. Este caso clínico descreve a evolução de uma paciente portadora de DAOP inoperável que respondeu adequadamente ao bloqueio simpático lombar.

Relato de caso: Paciente do sexo feminino, parda, 69 anos, estado físico II, acompanhada no serviço de algologia devido a dor isquêmica refratária em membros inferiores. A paciente já havia sido submetida a diversas abordagens cirúrgicas e tratamentos conservadores, sem sucesso. A cirurgia vascular considerou o caso como fora de possibilidade terapêutica, a não ser amputação do membro. Nesse momento, foi indicada simpatectomia. Após admissão no centro cirúrgico, a paciente foi monitorada, posicionada e sedada. O bloqueio foi feito com auxílio da radioscopia, bilateralmente, nos níveis L2-L3-L4 à direita e L3 à esquerda. Do lado direito, em cada nível citado, foram injetados 3 mL de álcool absoluto com bupivacaína 0,25% sem vasoconstritor e do lado esquerdo somente o anestésico local. O procedimento foi feito sem intercorrências. A paciente recebeu alta com completa remissão da dor.

Conclusão: O bloqueio neurolítico da cadeia simpática lombar é uma opção de tratamento eficaz e segura para controle da dor em pacientes portadores de isquemia crítica, nos quais a única intervenção possível seria a amputação do membro.

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Introduction

Chronic obstructive arterial disease (COAD) is characterized by a reduced blood flow in the lower limbs arterial beds. It has multiple etiologies, of which atherosclerosis is the most important. Patients with this disease remain asymptomatic until the affected vessel lumen has an obstruction greater than 50%, when an intermittent claudication occurs. In the later stages of the disease, pain at rest, ulcers and gangrene, and critical signs of ischemia occur.¹

Data from American studies show that a critical ischemia is found in 12% of the adult population and is more common in the elderly and in males.² The treatment is based on the revascularization of affected arterial territory, either using open techniques, such as bypass surgery or through endovascular and stenting procedures.³ In some cases, the outcome is poor and it is not possible to re-establish adequate blood flow. Fortunately, less than 10% of patients with critical lower limb ischemia (CLI) require amputation.⁴ The recommended treatment aims to relieve symptoms and consists of the use of analgesics, prostaglandins and stem cells, the latter two remain experimental.^{5,6} In case of refractory pain, lumbar sympathectomy is recommended. The aim of this article is to report the case of a patient with CLI, successfully treated with neurolytic block of the lumbar sympathetic chain, and perform a systematic review of lumbar sympathectomy as CLI treatment.

Case report

JRSB, female patient, Afro-descendant, 69 years-old, presented with systemic hypertension and COAD; monitored in the algology service due to difficult to treat lower limb

pain. The pain was excruciating (numerical verbal scale 10), burning type, more severe to the right, which appeared even at rest and worsened when walking, improving when limbs were outstretched. The physical examination showed non-fixed cyanosis in right toes and absence of popliteal, fibular and tibial pulses in the ipsilateral limb.

The patient had already undergone various treatments, including multiple surgical interventions, such as stenting in common iliac arteries and femoropopliteal bypass in the right lower limb. However, there was no improvement in pain symptoms. He was taken tramadol (400 mg.day⁻¹), amitriptyline (25 mg.day⁻¹), gabapentin (300 mg.day⁻¹), and dipyron (8 g.day⁻¹). Important to note that the doses of amitriptyline and gabapentin are below those recommended, as the patient had major side effects caused by these two drugs. Arteriography showed right common femoral artery obstruction and ipsilateral occlusion of the superficial femoral artery. Duplex scanning of the venous system showed thrombus in left common and superficial femoral veins and left popliteal vein. Based on the clinical picture, the vascular surgery indicated amputation of the right lower limb due to the technical difficulties of a new revascularization and the possibility of worsening symptoms of contralateral limb, also affected by vascular disease. Due to intractable pain, the algology service suggested lumbar sympathectomy.

After admission to the operating room, the patient was monitored with cardioscopy, pulse oximetry, and noninvasive blood pressure; positioned in the prone position; sedated with 1 mg of midazolam and 50 mcg of fentanyl; and maintained on spontaneous ventilation with O₂ supplementation via nasal catheter. Local anesthesia was performed with lidocaine 1%. The blockade was performed with the aid of fluoroscopy, bilaterally, in the L2–L3–L4 levels to the right

and L3 to the left, both with a number 22G Quincke needle. Following confirmation of needle positioning and observation of contrast dispersion in each level mentioned, 3 mL of absolute ethanol with bupivacaine without vasoconstrictor (WV) were injected on the right side and 20 mL of bupivacaine 25% WV on the left side. The patient, therefore, underwent right neurolytic block and left anesthetic block, in order to achieve vasodilation and central desensitization, with consequent pain relief. The procedure was uneventful and after 24 hours the patient was discharged with complete remission of the pain.

After over a year of the intervention the patient remains pain free.

Discussion

Peripheral arterial disease is quite common. The estimated worldwide prevalence of COAD is 10%. It is believed, however, that these data are still underestimated, as most patients remain asymptomatic for a long time.¹

COAD has an insidious course. Patients will only show symptoms when more than 50% of the vessel lumen is affected. Some, however, remain asymptomatic despite the disease severity due to the presence of a large network of collaterals present in the lower limbs. When chronic obstruction is not compensated by the collaterals, critical ischemia occurs. The manifestation of CLI is severe and persistent pain at rest that does not decrease with usual analgesics, it worsens when the limbs are elevated and decreases when they are pending, and may be associated with ulcers and gangrene. In more severe cases, due to pain severity, the patient does not sleep and develop psychiatric disorders, such as anxiety disorder.

About 5–10% of patients with COAD will progress to critical ischemia.^{1,7} The treatment in these cases is performed through revascularization techniques, such as bypass, endarterectomy, and endovascular stenting. However, in some situations in which the affected site cannot be revascularized, the indication for amputation is the only therapeutic option, as other treatments, such as cell therapy and the use of prostaglandins, L-arginine, and carnitine, are still experimental or have discrete results, respectively.^{8–11}

Lumbar sympathetic blockage arises as a treatment option in cases in which the pain is persistent, revascularization is not feasible, and there is indication for amputation.

Sympathectomy for arterial occlusion treatment is described since the beginning of the twentieth century, when in 1924 Jules Diez, used this technique to treat a patient with thromboangiitis obliterans in Argentina.¹² Since then, several studies have demonstrated the efficacy of this therapy for patients with peripheral arterial disease.

The pain control after sympathectomy is primarily related to the vasodilatory effects that it has on the collateral circulation. The increase in oxygenation means less tissue damage and, therefore, less pain. Moreover, the interruption of painful routes maintained by the sympathetic and the neurolytic direct effect on nociceptive fibers contribute to this effect. In this case, absolute ethanol was used, which causes dehydration of neural tissue, resulting in sclerosis of nerve fibers and destruction of myelin.

Yoshida et al.,¹³ treating 20 patients with peripheral vascular disease with phenolic sympathetic blockade, reported that in 73% of cases the results were considered good. Diabetes and ankle brachial index <0.3 were associated with lower success rate.

Holliday et al.¹⁴ evaluated 70 patients with CLI without possibility of vascular reconstruction. The short-term success rates (six weeks) of patients treated with surgical sympathectomy was 44% versus 18% for chemical sympathetic blockade. In the long-term (one year), however, success rates were similar, 47% and 45%, respectively. The procedures were associated with low morbidity.

Sanni et al.¹⁵ in a systematic review compiled the results of 13 studies of the subject and concluded that lumbar sympathectomy improves on a sustained basis the symptoms of patients with CLI. They further state that it is a minimally invasive procedure with few complications rates. Nesagikar et al.¹⁶ by applying a vascular surgeon questionnaire on indications, outcomes, and complications of lumbar sympathectomy, reported that the main indication for lumbar sympathectomy is pain at rest in patients with severe peripheral occlusive disease without surgical revascularization conditions. Lumbar sympathetic blockade was also used to treat ulcers, Raynaud phenomenon, and as a "bridge" for revascularization, in order to improve the surgical outcome. No serious complications were reported by respondents.

In fact, compared to the surgical blockade the chemical blockade with alcohol or phenol is safer, less invasive, with virtually no morbidity and mortality. Few cases of urinary retention, neuritis, and hematoma were reported as complications.¹⁶

The duration of analgesia is still uncertain. Some studies have shown that, after a year, more than half of patients remain pain free. Moreover, because it is a fairly safe procedure, the chemical blockade could be performed as many times as necessary to achieve control of the painful condition of the patient.^{17,18}

In this paper, we report the case of a patient with CLI successfully treated with lumbar sympathetic block. After over a year of the intervention, the patient remains with controlled pain symptoms and was not necessary to subject him to amputation.

Given the above, it can be concluded that the neurolytic block of the lumbar sympathetic chain is an effective treatment option, relatively safe, for pain control in patients with critical limb ischemia, in which the only possible intervention would be amputation. Professionals who work with these patients should remember that lumbar sympathectomy is an additional therapeutic strategy that can be used in order to avoid a surgical traumatic treatment, such as limb mutilating surgeries, which are associated with a worse prognosis.

Conflicts of interest

The authors declare no conflicts of interest.

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