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STUNNING THE STELLATE GANGLION FOR IMPROVING ACRAL CIRCULATION IN RAYNAUD'S PHENOMENON ASSOCIATED WITH SYSTEMIC SCLEROSIS: A CASE REPORT

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Abstract
Raynaud's phenomenon is a common and often disabling manifestation of systemic sclerosis, frequently refractory to conventional vasodilator therapy. Stellate ganglion block (SGB) improve regional blood flow by interrupting sympathetic vasoconstrictor tone and can be used as a rescue option in severe upper-limb ischemia. This case report describes a 56-year-old woman with systemic sclerosis and secondary Raynaud's phenomenon, who showed marked improvement in acral circulation and symptoms following SGB after inadequate response to pharmacologic therapy.

Introduction

Raynaud's phenomenon is characterized by episodic vasospasm of the digital arteries and arterioles, leading to a classic triphasic color change, pain, and, in severe cases, digital ulceration and tissue loss. In systemic sclerosis, Raynaud's phenomenon is usually more severe and is driven by a combination of structural microangiopathy and increased sympathetic vasoconstriction. Standard management includes lifestyle measures, calcium-channel blockers, phosphodiesterase-5 inhibitors, prostacyclin analogues, and other vasodilators. However, some patients remain symptomatic and are at risk of ischemic complications despite optimal medical therapy. Stellate ganglion block targets the cervicothoracic sympathetic ganglion and can increase digital blood flow and skin temperature in the upper limb, making it a potential option for refractory Raynaud's phenomenon. This report highlights the role of Stellate Ganglion block as an intervention in a patient with systemic sclerosis and severe secondary Raynaud's attacks.

Case Presentation

A 56-year-old female, known case of diffuse cutaneous systemic sclerosis for 8 years, presented with worsening Raynaud's attacks involving right hand, more pronounced on the index finger, for the preceding 6 months. She reported multiple daily episodes of pallor and cyanosis of the right index finger and now gangrenous changes, precipitated by mild cold exposure and emotional stress, associated with burning pain and functional limitation in daily activities. On examination, she had sclerodactyly, tight skin over the hands and forearms, and healed digital pits; capillary refill in the fingers was markedly delayed and finger pulp appeared cool to touch. There were no clinical features of large-vessel occlusive disease or diabetic vasculopathy. Laboratory evaluation confirmed RA factor positivity with a pattern consistent with systemic sclerosis; inflammatory markers were mildly elevated, and echocardiography did not reveal significant pulmonary hypertension. Prior to

referral for interventional pain management, she had been treated with non-pharmacologic measures, maximally tolerated calcium-channel blockers, and additional vasodilators, with only partial relief and ongoing functional impairment.Because of persistent symptoms and concern about progression to critical digital ischemia, a decision was made to perform a right-sided stellate ganglion block as a therapeutic trial to improve acral circulation. The procedure was carried out in a monitored setting with standard non-invasive hemodynamic monitoring and intravenous access. Under ultrasound guidance, the Chassaignac's tubercle at the C6 level was identified, and after negative aspiration and confirmation of appropriate spread, a mixture of local anesthetic (5 mL of 0.5% bupivacaine and 3mL of 2% Lignocaine with Adrenaline) was injected around the stellate ganglion. Within minutes, the patient developed a right-sided Horner's syndrome, and the right hand became warmer and more erythematous compared to the contralateral side, accompanied by an increase in finger pulse oximetry waveform amplitude and subjective pain relief. No immediate complications such as intravascular injection, hoarseness, or respiratory distress were observed, and the patient was monitored for a suitable period before discharge. Over the next several days she reported a marked reduction in the frequency and severity of Raynaud's attacks in the treated hand, improved tolerance to cold exposure, and better ability to perform fine motor tasks; these benefits prompted planning of repeat or contralateral blocks depending on symptom evolution.

Indications

- Complex regional pain syndrome of the head and upper limbs
- Peripheral vascular disease
- Upper extremity embolism
- Postherpetic neuralgia
- Chronic post-surgical pain
- Hyperhidrosis
- Raynaud disease
- Scleroderma
- Orofacial pain
- Phantom limb
- Atypical chest pain
- A cluster or a vascular headache
- Post-traumatic stress disorder
- Meniere syndrome
- Intractable angina
- Refractory cardiac arrhythmias

Contraindications

- Recent myocardial infarction
- Anti-coagulated patients or coagulopathy (evaluate risk/benefit ratio)
- Glaucoma
- Pre-existing counter lateral nerve palsy
- Severe emphysema
- Cardiac conduction block

Discussion

This case illustrates the potential role of stellate ganglion block in improving acral circulation and alleviating symptoms in secondary Raynaud's phenomenon associated with systemic sclerosis when medical therapy alone is inadequate. Interruption of sympathetic efferent activity at the stellate ganglion reduces vasoconstrictor tone, thereby increasing digital blood flow, skin temperature, and perfusion, which translates clinically into warmer extremities, shorter and less intense vasospastic

attacks, and improved healing in ischemic lesions. Although the duration of benefit may vary, serial blocks, continuous catheter techniques, or combining SGB with other modalities have been reported to sustain improvement in selected patients. Compared with more invasive options such as surgical sympathectomy or spinal cord stimulation, SGB is minimally invasive, repeatable, and can serve as a bridge to other therapies or as a stand-alone adjunct in carefully selected cases. Potential complications include vascular puncture, inadvertent neuraxial or intravascular injection, pneumothorax, and recurrent laryngeal nerve block, emphasizing the importance of image guidance, meticulous technique, and appropriate patient selection and monitoring. Given the limited but growing evidence base, this case supports consideration of SGB as part of a stepwise, multidisciplinary approach to severe Raynaud's phenomenon in systemic sclerosis, particularly in patients with refractory pain or threatened digital ischemia.

Conclusion

In a 56-year-old woman with systemic sclerosis, and severe secondary Raynaud's phenomenon, stellate ganglion block was associated with rapid improvement in acral perfusion and symptomatic relief after failure of conventional vasodilator therapy. This experience suggests that SGB can be a valuable adjunctive option for improving hand circulation and function in selected patients with systemic sclerosis–related Raynaud's phenomenon. Larger prospective studies are needed to better define the optimal timing, regimen, and long-term efficacy of stellate ganglion block in this population.

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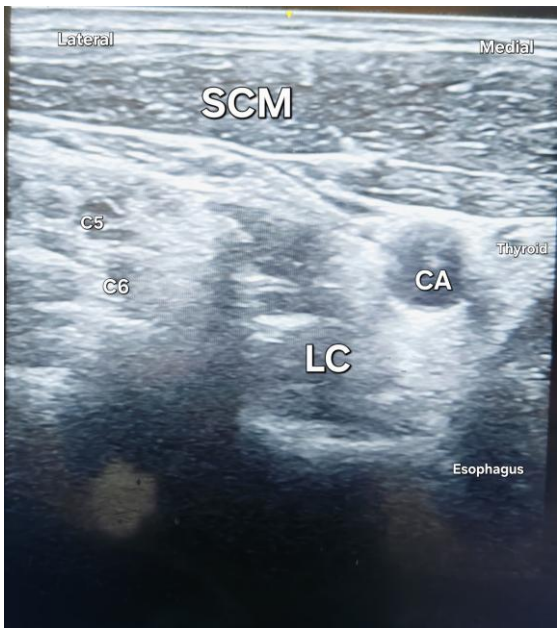

LC: Longus colli muscle,
CA : Carotid artery