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Neurolytic Lumbar Sympathetic Block in the Treatment of Raynaud's Phenomenon

THOMAS M. SKEEHAN, M.D.,* PHILIP C. CORY, JR., M.D.†

Raynaud's phenomenon is described as episodic, cold-induced pallor and cyanosis with subsequent suffusion and erythema. The paroxysmal vasospasm of the distal extremities characterizes Raynaud's disease if it occurs alone, or Raynaud's phenomenon if associated with other connective-tissue or autoimmune disorders. Progressive systemic sclerosis (PSS), or scleroderma, is a connective tissue disease that presents with variable severity as a multisystem disease. The nonpitting tautness involving hands, forearms, and face is accompanied by involvement of the gastrointestinal, pulmonary, cardiovascular, renal, and musculoskeletal systems. Raynaud's occurs in 90% of patients with the skin changes of scleroderma.¹

The many therapeutic measures used to treat the paroxysmal vasospasm have met with variable success. These modalities include beta-adrenergic blockers, arterial vasodilators, intraarterial reserpine, iv guanethidine and reserpine, and renin-angiotensin inhibitors.²

Although neurolytic sympathetic blockade is effective in the treatment of rest pain in patients with obliterative arterial disease of the lower limbs,^{3,4} no published data are available for similar success in patients suffering from pain and ischemic changes in the lower limbs from Raynaud's phenomenon. One reason may be that Raynaud's symptoms are almost always limited to the hands.⁵

We describe a case of a patient with known PSS presenting with severe Raynaud's phenomenon and compromise of toe perfusion with cyanosis and ulceration, who was treated with bilateral lumbar sympathetic phenol blocks after diagnostic lumbar epidural and lumbar sympathetic blocks.

REPORT OF A CASE

A 69-yr-old man with PSS diagnosed 2 yr previously, with skin changes over the arms and hands, esophageal obstruction requiring numerous dilation procedures, interstitial pulmonary fibrosis, and polyarthralgias, had symptoms consistent with Raynaud's phenomenon of the feet. Complaints included pain brought on by cold, with color changes from white to blue involving the toes but not the fingers. Symptoms had progressed over the previous 4 weeks. Physical examination revealed superficial ulcerations of the lateral two toes of the right foot. The involved toes demonstrated poor capillary refill of greater than 20 s, were cool to the touch, and had a dark, cyanotic appearance. He was taking penicillamine 250 mg po tid, cimetidine 300 mg po qid for reflux symptoms, and nifedipine 20 mg po qid to promote vasodilatation.

A diagnostic lumbar epidural block was performed to assess the role of reversible vasospasm. The block was performed *via* a catheter at L2–3, using 10 ml of a 0.5% solution of lidocaine, which resulted in a T-11 level by sensation of temperature. Skin temperature was measured with thermistor probes on each great toe. Although an adequate sympathetic block was expected, temperature did not change more than 0.5° C for 60 min, and he was discharged from the clinic when the block was regressing. However, at the 2-h postblock evaluation, the patient had good relief of pain, and both feet were noticeably warmer to the touch, with improved capillary refill of 12 s. Skin temperatures were not taken, but skin plethysmography demonstrated improved flow volume in the pedal cutaneous circulation bilaterally.

Because of the favorable short-term response, the patient returned 1 week later for a diagnostic and possible neurolytic sympathetic block. On return visit, he had minimal pain relief, and time for capillary refill had increased to greater than 20 s. Needles were inserted for bilateral sympathetic block at L-3, their position confirmed by cross-table ra-

* Resident in Anesthesia.

† Assistant Professor in Anesthesia.

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Address reprint requests to Dr. Skeehan.

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diograph, and 10 ml of bupivacaine 0.5% was injected on each side. This resulted in no untoward sequelae and was associated with good pain relief. The test dose was followed with 10 ml of a 6% aqueous phenol solution on each side. Temperatures of both great toes increased 5° C over the next 2 h; capillary refill improved again to less than 15 s.

Mild, transient orthostatic hypotension was the only side effect from the procedure. The symptoms of pain and cold sensitivity have abated. In addition, the ischemic ulcers have shown complete healing within 8 months following the blocks.

DISCUSSION

Microvascular abnormalities probably are caused by endothelial cell injury in small arteries of patients with scleroderma. Similarly, Raynaud's phenomenon is the result of structural abnormalities of the arteriolar vessel wall that predispose the digits to the exaggerated vasospasm and subsequent vasodilation. Several pathologic studies were unable to distinguish between the lesions of scleroderma and Raynaud's.⁶ Myointimal cell migration in response to the endothelial cell injury with resultant vasomotor instability probably is the common pathophysiologic pathway of Raynaud's in the periphery and scleroderma systemically.¹

This case demonstrates a good response to the use of lumbar sympathetic block for the treatment of Raynaud's phenomenon of the lower extremity. The response to diagnostic sympathetic block was atypical in that the beneficial effects of sympathectomy were not realized for several hours but then lasted for a time period longer than the duration of the anesthetic. The reason for the delay in vasomotor blockade is not known, but is possibly related to the variable response of patients to cervical sympathetic block for upper-extremity Raynaud's.⁵ The success of sympathetic block in this case suggests a role for reversible

vasospasm in the pathogenesis of Raynaud's. Raynaud's phenomenon may involve a continuum of vascular disease ranging from vasomotor hyperactivity, which would respond to chemical sympathectomy, to complete obliterative occlusion, which would not respond. Diagnostic blocks may aid in differentiation of these etiologies, while predicting the response to neurolytic sympathetic block.

As of this writing, beneficial effect from lumbar sympathetic block has lasted 8 months. Because the mechanism leading to vasospasm is not known, with disease progression the current perfusion improvement may not last, and long-term results are indeterminate. However, if vasospasm results in eventual obliterative changes, early permanent sympathetic block may represent optimal therapy.

This case suggests that neurolytic sympathetic blockade should be considered in the treatment of Raynaud's phenomenon of the lower extremity.

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Laser Perforation of a Main Stem Bronchus

RICHARD E. EMERY, M.D.*

Airway perforation is a rare but potentially fatal complication following laser surgery.¹ Perforation of a main stem bronchus by a laser is described below.

* Anesthesiology Resident.

Received from the Department of Surgery, Anesthesia and Operative Service, Brooke Army Medical Center, Fort Sam Houston, Texas 78234-6200. Accepted for publication August 26, 1985.

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Address reprint requests to Dr. Emery.

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REPORT OF A CASE

A 3-yr-old girl was admitted for excision of recurrent granulation tissue in her tracheobronchial tree. She had undergone 34 prior anesthetics for similar surgery, the most recent was 2 weeks before admission.

The child had nonspecific congenital granulation tissue on multiple areas of her trachea as well as a circumferential lesion of the left main stem bronchus 1 cm distal to the carina. On multiple previous occasions, bronchoscopy had led to spasm and swelling of the left bronchus with loss of breath sounds over the left chest. Breath sounds usually improved over the left chest within 45 min following completion of bronchoscopy. She received dexamethasone 1 mg every other day to diminish swelling in her tracheobronchial tree. No other medications or drug allergies