CLINICAL NOTES

Deep Venous Thrombosis as a Cause of Stump Swelling in Two Lower Extremity Amputee Patients

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- Two patients who were initially treated for an infection as a cause for their swollen stump were subsequently found to have deep venous thrombosis. The diagnosis was made noninvasively by compressive ultrasound (CU) scanning. DVT should be considered in the differential diagnosis of stump swelling in the otherwise stable, post-rehabilitated lower extremity amputee patient.© 1993 by the American Congress of Rehabilitation Medicine and the American Academy of Physical Medicine and Rehabilitation

In the post-rehabilitated stable lower extremity amputee patient, stump swelling is usually attributed to poor prosthetic fit, trauma, or infection. The majority respond with appropriate management. Deep venous thrombosis (DVT) is rarely considered in the differential diagnosis. The lack of reliable noninvasive methods to diagnose DVT in the past may have contributed towards this oversight. This report describes the use of compressive ultrasound (CU) scanning for noninvasive diagnosis of DVT in two patients.

CASE REPORTS

Case 1
A 62-year-old woman smoker with a left below-knee amputation 11 weeks ago for acute arterial occlusion presented to the prosthetic clinic with a 5-day history of left thigh redness and swelling. She had undergone an uneventful 4-week inpatient rehabilitation and was discharged 3 weeks ago ambulatory with a temporary training prosthesis. She had also returned to full-time employment. She was treated for cellulitis with cloxacillin. There was no improvement after one week of antibiotics and a diagnosis of DVT was considered. CU scanning was done and showed noncompressibility of the superficial femoral and popliteal veins. Due to the lack of experience with this diagnostic modality at that time in 1987, retrograde venography was also performed. The right femoral vein was entered and dye injected into the right common iliac vein with the patient doing a valsala. There was occlusion of the left common iliac vein with nonocclusive thrombus extending 3 to 4 cm up into the lower inferior vena cava. She underwent full anticoagulation with heparin and warfarin. Her stump swelling resolved and she returned to her job.

Case 2
A 46-year-old man who suffered a traumatic left below-knee amputation 15 years ago presented to the prosthetic clinic with stump swelling. He had been admitted to the orthopedic ward five weeks ago for excision of a left popliteal abscess. The pathology report was traumatic fat necrosis. The postoperative course was uneventful, although mild stump swelling persisted. He was discharged ambulatory on his permanent prosthesis. Due to a heightened index of suspicion, CU scanning was done, which showed noncompressibility of the superficial femoral vein, suggestive of thrombosis. Of note is that impedance plethysmography (IPG) was reported to be negative. He underwent full anticoagulation with heparin and warfarin, with subsequent resolution of the stump swelling.

DISCUSSION

DVT as an early postoperative complication of lower extremity amputation has been extensively reported in the past.1 With improved operative techniques, wound management, and early postoperative mobilization, the incidence has decreased so dramatically that it is now not considered an increased risk other than that of the general surgical patient.2 4 During the rehabilitation phase, DVT is also not reported as a concern.5 6 In a Medline search extending to 1966, DVT as a presenting problem in the stable, postrehabilitative lower extremity amputee subject, has not been reported in the English literature. One such case may have been alluded to in the description by Frost and associates7 of their use of high resolution realtime ultrasound in the diagnosis of proximal lower extremity DVT. They have also summarized in their article the basis of using compressive ultrasonography in making this diagnosis.

In both of the above cases, the patients did not have clear risk factors predisposing towards a DVT. Although Case 1 may arguably be close to the operative event, at 3 months postoperative and 3 weeks postrehabilitation, she nevertheless was fully ambulatory and active in the preceding weeks prior to her presentation. Similarly, in Case 2, one may argue that his surgical procedure 5 weeks ago may have predisposed him to a DVT. This is certainly possible because his postoperative course would have dictated a short time of relative immobilization, being off his prosthesis to allow wound healing. Notwithstanding, he was also discharged ambulatory.

These two cases suggest that DVT in the stable postrehabilitative lower extremity amputee patient may not be as rare as the paucity of literature may indicate. In the first

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DVT AS A CAUSE OF STUMP SWELLING, Chong

The other causes of stump swelling in the stable population to be included in a common differential include "choking" syndrome, due to poor prosthetic fit, and trauma.

Compressive ultrasonography is becoming the most widely used noninvasive method for the diagnosis of DVT. The popliteal to common femoral veins, but not the calf veins, can be examined by this method; it is 100% sensitive and 99% specific to symptomatic proximal vein thrombosis.⁶ CU scanning, however, is relatively insensitive to asymptomatic proximal thrombi, which tends to be much smaller than symptomatic thrombi.⁹ Therefore, in the patient with stump swelling in whom DVT is suspected, if the initial CU scanning is negative, one can repeat the test serially over a period of 7 to 10 days if the index of suspicion remains high. Alternatively, retrograde venography may be performed to confirm the diagnosis and is the test of choice should CU scanning not be available.

CONCLUSION

In the stable postrehabilitative lower extremity amputee subject who presents with stump swelling, DVT should be considered in the differential diagnosis. In particular, the individual who is refractory to the treatment for an infectious etiology should be investigated. An accurate, fast, simple, noninvasive method to make this diagnosis is available with compressive ultrasound scanning. With exact diagnosis, anticoagulation can be instituted and recovery expedited.

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