Urokinase For Thrombolysis Of Autologous Vein Graft

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Citation

Abstract
A 78 year-old man underwent angioplasty for a tight stenosis at the distal anastomosis of the autologous vein graft bypass of the femoral-popliteal artery at 7 years after the surgery. The patient failed to take anti-platelet medications after the procedure, and was found to have a total occlusion of the bypass graft on ultrasound during follow-up at 1 week. He was the treated with urokinase. This case illustrated the lowest effective dose of urokinase and the importance of antiplatelet therapy in this clinical scenario.

CASE REPORT
A 78 year-old man underwent angioplasty for a tight stenosis at the distal anastomosis of the autologous vein graft bypass of the femoral-popliteal artery at 7 years after the surgery (Figures 1 and 2). The patient failed to take anti-platelet medications after the procedure, and was found to have a total occlusion of the bypass graft on ultrasound during follow-up at 1 week. Examination revealed decreased temperature in the left leg but pulses in the left foot were recordable on Doppler. The patient was started on aspirin 325 mg and clopidogrel 75 mg once daily following 300 mg loading dose.
Selective angiogram was performed via access in the right common femoral artery, and confirmed an occluded venous conduit (Figure 3). The blood flow reconstituted in the popliteal artery via collaterals from the profundus femoris (Figure 4), and three-vessel runoff was present distally (Figure 5). Balloon angioplasty is contraindicated as this
would cause a major distal embolization and would convert the patient from a stable condition into having acute leg ischemia.

**Figure 3**
Figure 3

**Reconstitution in the popliteal artery via collaterals from profundus**

*1 week later*
A 6 F cross-over sheath was positioned in the left external iliac artery. A total of 5,000 U of unfractionated heparin was given as a bolus. Recanalization of the graft was successfully performed with a 0.035” stiff-angled glidewire supported by a 5 F angled glide-catheter. A 0.014” 300 cm Balance-Middle-Weight (BMW) wire was used to exchange for the glidewire. Thrombectomy using Angiojet (Possis) was performed (Figure 6) but no significant improvement was noted. A Meiwssen infusion was placed in the proximal segment of the vein graft and a total of 2,000 U/min of urokinase was infused into this catheter (Figure 7). UFH was infused at a rate of 500 U/hr via the sheath.
Sixteen hours later, a repeat angiogram showed no improvement with 2,000 U/min urokinase infusion (Figure 8). The dose was increased to 4,000 U/min, and UFH was infused at 700 U/hr (PTT was about 55 seconds). Three hours later, a repeat angiogram showed a widely patent vein graft, without a culprit lesion that would be responsible for the thrombosis (Figures 9 and 10). Distal run-off remained
excellent (Figure 11). All the catheters were removed, and hemostasis was achieved with manual pressure after the activated clotting time returned to < 180 seconds. The patient tolerated the procedure well without any complications. The patient remained well at 2 months of follow-up.
Figure 9
Urokinase 4000 U/min x 3 hrs

Figure 10
CONCLUSION

This case illustrated the lowest effective dose of urokinase and the importance of antiplatelet therapy in this clinical scenario.

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References
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