Reteplase for Acute Stroke Intervention

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Purpose
Intraarterial reteplase infusion was used to treat eight patients with acute thromboembolic ischemic strokes. No previous experience with this drug for acute stroke intervention has been reported.

Materials & Methods
Reteplase was infused through microcatheters directly into the occlusive thromboemboli in eight patients. Treatment was initiated 1.0 to 6.5 hours (mean, 4.0) after symptom onset. Initial NIH stroke scale scores ranged from 12 to 35 (mean, 20). The dose of reteplase ranged from 1.0 to 4.0 units (mean, 2.2).

Results
Thrombolysis was successful (TIMI 3 flow) in 6 of 8 cases. Successful endovascular embolectomy with a microsnare was performed in one patient after thrombolysis failed. No symptomatic hemorrhagic complications occurred. Minimal, asymptomatic petechial hemorrhage was identified on CT in one patient. Significant neurologic improvement was noted in 5 of 8 patients. One patient died from mass effect related to nonhemorrhagic infarction.

Conclusion
Urokinase remains unavailable in the United States. Substitution of alteplase tissue plasminogen activator for intraarterial thrombolytic therapy has been associated with increased hemorrhagic complications. Reteplase is a nonglycosylated deletion mutant of wild-type alteplase that lacks the kringle-1, finger, and protease domains of alteplase. Reteplase and alteplase differ in two significant aspects. Alteplase has a much higher fibrin affinity than does reteplase. Unlike alteplase, reteplase may be diluted significantly without loss of activity or precipitation. Other differences between the two drugs do not appear to be clinically significant. Our preliminary experience suggests that intraarterial reteplase infusion is effective and safe for acute stroke intervention. The lack of hemorrhagic complications is encouraging.

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