

Alteplase versus urokinase in restoring blood-flow in haemodialysis - catheter thrombosis

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Background

Central venous catheters (CVCs) are used in up to 15%–20% of patients undergoing haemodialysis (HD) as a source of vascular access. Thrombosis of CVC in HD patients is common, and it can lead to the elimination of vascular sites.

The reported incidence of catheter occlusion due to thrombosis ranges from 5% to 80% in the HD population. We wished to examine the efficacy of alteplase versus the use of urokinase in our HD population to see which was more efficacious as the optimal management of an occluded dialysis catheter remains unclear.

Methods

The effectiveness of alteplase and urokinase in restoring adequate HD blood-flow rates was examined. A retrospective review was completed by using medical records of HD patients with central venous catheters, receiving alteplase or urokinase for presumed catheter thrombosis.

Patients received 2 mg of alteplase administered to the length of each catheter lumen or urokinase 12,500 units administered as a push lock to each catheter lumen.

Effectiveness of thrombolysis was defined as achieving a post treatment HD blood-flow rate of > 300 mL/min, maintained for at least 30 minutes during the dialysis session.

Results

Both thrombolytic agents significantly increased the HD blood-flow rates.

Patients with alteplase treated catheters were twice as likely to achieve HD blood-flow rates of > 300 mL/min and were more likely to complete HD during that session (87% versus 70%)

The percentage of functioning catheters at a subsequent HD session did not significantly differ between groups.

Most patients in both treatment groups required no further interventions.

Conclusions

HD blood-flow rates increased after either alteplase 2mg or urokinase 12,500 units was used to clear presumed catheter thrombosis. Alteplase was more likely than urokinase to result in a HD blood-flow rate of > 300 mL/min.

Alteplase was therefore slightly superior to urokinase in restoring blood flow through catheters. However, further studies are necessary to identify the risk factors for catheter occlusion and compare the efficacy, safety and cost of different thrombolytic agents in the treatment of mechanical dysfunction of CVC for HD.