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Sequential combination of different thrombolytic therapy regimens in the management of patients with prosthetic valve thrombosis and stuck valves

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Introduction: Prosthetic valve thrombosis (PVT) is serious complication among patients with prosthetic heart valves. Recently, thrombolytic therapy (TT) regimens with low-dose, slow and ultra-slow infusions of tissue type plasminogen activator (tPA) has been widely used as a first-line treatment for PVT. PVT with stuck valves is a special entity which deserves particular management. In our study, we aimed to investigate the effectiveness and safety of sequential combination of different TT regimens in the management of patients with PVT and stuck valves.

Methods: The study included 52 patients with PVT and stuck valves [female: 34 (65.4%), mean age: 47.5±12.4] who underwent TT with sequential combination of slow (25mg/6 hours) and ultra-slow (25mg/25 hours) infusion of low dose t-PA regimens which was mainly based on the New York Heart Association functional class of the patients according to a previously established algorithm. All patients were evaluated by cinefluoroscopy, transthoracic and transesophageal echocardiography (Figure 1).

Results: The median number of TT sessions with slow and ultra-slow infusion of tPA were 1 (0-2.75) and 3 (1.25-5) respectively. Total tPA dose was 120 (96-175) mg and TT was successful in 46 (88.4%) patients. There were 3 major complications (cerebrovascular accident:1, intracranial bleeding:1, gastrointestinal bleeding requiring transfusion:1) and 6 minor complications. The in-hospital mortality rate was 1.9%. Increased thrombus area was found to be the only independent predictor of both failed TT and adverse events. Thrombus area above 1.45 cm2 predicted failed TT with a sensitivity of 83% and a specificity of 80% (AUC:0.871; 95%CI: 0.752-0.991; p=0.003) and predicted adverse events with a sensitivity of 77% and a specificity of 73% (AUC:0.854; 95%CI: 0.747-0.961; p=0.001). There was a moderate positive correletion between thrombus area and total tPA dose used (r=479; p<0.001).

Conclusion: This study demonstrated that TT with sequential combination of slow and ultra-slow infusion of low dose t-PA regimens may be useful for the treatment of patients with PVT and stuck valves with acceptable success and complications rates.
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