

Clinical Experience with Thrombolytic Therapy using Low Dose of Tissue Plasminogen Activator in the Management of Intracardiac and Major Vessels Thrombosis

Rodriguez Ogando A. (1), Zunzunegui J.L. (1), Santiago M.J. (2), Ballesteros F. (1), Álvarez M. (1), Rodriguez R. (1), Panadero E. (1), Lopez Herce J (2), Maroto E. (1).

Gregorio Marañón General University Hospital, Madrid, Spain. Pediatric Cardiology Unit.(1).Gregorio Marañón General University Hospital, Madrid, Spain. Pediatric Cardiac Intensive Care Unit (2).

Introduction: Incidence and associated morbidity to intravascular thrombosis are an increasing problem, especially patients admitted to pediatric cardiac intensive care unit (PICU). Experience with tissue plasminogen activator (t-PA) and dosage recommendations are limited.

Objective: To analyze the efficacy and side effects of low doses of t-PA for the management of acute intracardiac and major vessel thrombosis in children.

Patients and Methods: Prospective observational study. 34 children with congenital heart disease admitted to PICU, between 2 days of life and 13 years (53% <1year), treated with low doses (0,01-0,06 mg/kg/h) of continuous intravenous thrombolytic therapy with t-PA were studied between 2008-2011. Indications for treatment were: evidence or clinical suspicion of intravascular and intracardiac thrombosis, based on ultrasound and angiographic diagnosis. Treatment was ended when: clinical improvement, partial/complete resolution of thrombus and/or important side effects was achieved.

We collected demographic, clinical(ex, recent surgery), and laboratory(ex, D-dimer) data; treatment(ex, anticoagulants); t-PA dosage and duration; administration method(local-systemic); efficacy(complete or partial thrombus resolution based on ultrasound or angiography) and side effects: minor bleeding(ex, epistaxis), major bleeding(ex, retroperitoneal bleeding). Clinical and laboratory surveillance were performed before, during and 12-24h after treatment.

Results: 5 patients presented venous thrombosis and 9 arterial. 9 patients Fontan conduit thrombosis, 8 right atria thrombosis, one systemic-pulmonary fistulae thrombosis, one valved conduit(Labcor) thrombosis in mitral position and one left ventricle thrombus. In two patients, thrombus appeared, during ECMO support, and in one during mechanical biventricular support. 30 patients underwent previous surgery. 17 patients had catheter related thrombosis, 12 postop, and 5 post-catheterization. Ultrasound diagnosis was performed in 25 and angiography in 8. The 34 patients received low doses of t-PA, medium 0,036, SD(0,014), medium duration 30 hours(range 5-148); 20 patients received previous intravenous bolus; 26% received local administration by placing a microcatheter under angiographic guidance; 26 patients received previous treatment (heparin, antiplatelet). Treatment was effective in 30 patients(43% partial resolution). Major bleeding appeared in 5 cases(2 with mechanical cardiac support, 4 with systemic administration), and minor bleeding in 10. Mortality was 6%. There were no differences between laboratory values pre versus post treatment.

Conclusion: Low dose t-PA treatment is effective for acute intracardiac and major vessel thrombosis treatment, with a low range of serious complications.