

Pharmacological treatment of Pump-related Thrombosis in Patients with Left Ventricular Assist Device (HearWare HVAD).

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Purpose: Left ventricular assist device (LVAD) is one of the established treatments for advanced heart failure. Pump thrombosis (PT) is a major complication, increasing morbidity and mortality in LVAD patients. PT management includes surgical and pharmacological measures but the optimal treatment is not well defined. For this purpose, we reviewed our experience.

METHODS

From June 2011 to July 2019, 85 patients were implanted with a third generation LVAD (HeartWare HVAD, Medtronic, Inc.). All patients were implanted as a Bridge to Transplantation (BTT). PT was considered using INTERMACS criteria.. Pharmacological treatment was defined by the use of intravenous heparin alone or in association with systemic thrombolysis with tissue plasminogen activator, t-PA-Actilyse® or with left intraventricular thrombolysis with t-PA-Actilyse®.

Success of the treatment was defined as improvement on biological and/or LVAD parameters, no surgical pump exchange and survival at 30 days. Treatment complications were defined as ischemic or hemorrhagic stroke or fatal bleeding.

RESULTS: There were 47 pump thrombosis in 15 patients (18.3%, 12 men) for a total event rate of 3.1 thrombosis/patient.

The mean time for all thrombotic event was 100.2 ± 134.23 months and mean time for the first thrombotic event for heparin alone, local fibrinolysis and systemic fibrinolysis was 85.7, 40.1 and 174.8 months respectively.

Thirteen thrombotic events were treated with systemic heparin alone, 26 were treated with systemic thrombolysis and 8 were treated with left intraventricular thrombolysis.

Pharmacological treatment was successful in 13 patients, two patients died (intraventricular thrombolysis): one from stroke hemorrhage and one from abdominal hemorrhage. 12 patients were successfully transplanted. One patient is still alive with the LVAD.

The mean waiting time on the transplant list was 35.3 ± 18.1 months after PT.

The 30 days survival is not statistically significant between the different pharmacological treatments for pump thrombosis.

Conclusion: LVAD thrombosis is a major complication after LVAD implantation. Pharmacological conservative treatment with heparin or fibrinolysis could be the first line treatment before considering pump exchange or urgent heart transplant.