INTRODUCTION AND OBJECTIVES

Shortage of donor hearts and increasing application of Ventrillcular Assist Devices (VADs) may lead to increased waiting times on the transplant list, which poses new challenges in the treatment of children with terminal heart failure. There is an urgent need for VAD systems that allow long-term support with low morbidity and minimal restrictions of the daily activities of patients. With the development of implantable continuous flow VADs of the third generation, survival and quality of life have improved. Because implantable VAD systems that are suitable for adult patients are too large for application in pediatric patients, paracorporeal systems are routinely used in children. In this presentation, we report our experience with outpatient follow up three children with continuous flow VAD(HeartWare Inc, Miami Lakes, FL). Our first case is the youngest patient among outpatient followed patients in Europe.

METHOD

In this retrospective study, we evaluated the data of three children with implantable continuous flow VAD (HeartWare Inc, Miami Lakes, FL).

RESULTS

Between August 2012 and January 2013 three patients (2 girls, 1 boy; aged 7 to 13 years; weighted 18 to 44 kg) received continuous flow HeartWare VAD. The weight of the youngest patient was 18 kg. All of the three patients had end stage heart failure due to dilated cardiomyopathy and under high dose positive inotropic support. After median sternotomy, the short integrated inflow cannula was inserted into the ventricle, and the outflow graft connected the pump to the aorta. A sewing ring attached to the myocardium and allowed pump orientation adjustments intraoperatively.

The device size and short inflow cannula allowed pericardial placement, which eliminated the need for device pockets. The driveline was then tunneled to the right upper quadrant and was connected to the controller. Anticoagulation was begun, once bleeding had subsided, on postoperative day 1 with unfractionated heparin and a target activated partial thromboplastin time of 50 to 60 seconds. As patients tolerated oral nutrition, anticoagulation was switched to plus platelet inhibition with acetylsalicylic acid and dipyridamole. All of the patients were extubated on postoperative first day. The duration of intensive care stay varied between 6 to 10 days. Patients were discharged from hospital 35 to 60 days after VAD implantation.

On follow up our three patients, we make INR measurement every week; physical examination including growth monitoring and echocardiographic and psychological evaluation every month. Early mobilization and discharge from the hospital decreased the risk of hospital infection. They can easily perform daily social activities and attend school. Their school performance are very good. Living with their families at home certainly decreases patients’ and their parents’ anxiety; the affect of the patients totally changed positively after discharge from the hospital. In none of the our patients, we observed thromboembolic event or VAD-related infection. Only one of the three patients could be bridged to heart transplantation; others patients are still waiting for heart transplantation.

CONCLUSION: In our country, especially in pediatric population, the waiting time for heart transplantation is very long. Implantable continuous flow device support with HeartWare assist system offers a safe and comfortable alternative to paracorporeal systems for larger children and adolescents with end stage heart failure. HeartWare system provide early mobilization of these patients and continue to perform their normal daily social activities.