PRELIMINARY DATA ON THE CLINICAL USE OF INFANT JARVIK 2015 IN CHILDREN WITH DILATED CARDIOMYOPAHTY: RECOVERY WILL BE THE NEW THERAPEUTIC GOAL?

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Statement and purpose: continuous-flow (CF) and intra-corporeal ventricular assist devices (VAD) has becoming attractive for their potential benefit in pediatric heart failure population. However, in those children weighing less than 20 kg CF VAD are still challenging. We reported the effect of CF VAD in small children with dilated cardiomyopathy refractory to conventional pharmacological treatment.

The ***Infant Jarvik 2015*** is an implantable continuous-flow VAD specifically designed for small children, under one year up to about the age of ten. It is the smallest pump conceived: its 15mm-diameter infant-size pump is about the size of one AA battery.

Methods: we implanted CF VAD type Infant Jarvik 2015 (Infant Jarvik 2015 Jarvik Heart, Inc., New York, NY) in 3 consecutive pediatric affected by dilated cardiomyopathy with refractory symptoms of heart failure.

Results: mean weight at implantation was 11 kg. Primary cardiovascular diagnosis was dilated cardiomyopathies in all. The implantation procedure was safe and successful in all 3 children. The mean time on VAD assistance was 336,7 ± 105,4 days. All patients were treated with anti-heart failure therapies. 1 patient was discharged at home with Infant Jarvik. In all patient we obtain a significant recovery of left ventricular (LV) function with a significant reduction of LV end diastolic diameter and an increase in ejection fraction (LVEF): all reached a LVEF value > 45%. The mean follow up after Infant Jarvik 2015 LVAD removal was 120 ± 63,3 days. No acute episode of heart failure during follow up have been recorded

		Patient 1			Patient 2			Patient 3		
		Pre Implant	Pre Weaning	Post Explant	Pre Implant	Pre Weaning	Post Explant	Pre Implant	Pre Weaning	Post Explant
EDD	cm (z score)	3.8 (+2.5)	4 (+2)	4 (+2,4)	4.5 (7.5)	4 (+2.8)	4.2 (+3.9)	5.2 (+11.3)	2.4 (-1.5)	35 (+3.6)
ESD	cm (z score)	3.3 (+6.6)	2.9 (+3.1)	2.7 (2.5)	3.8 (11.5)	2.5 (+1.96)	2.4 (+2.9)	4.4 (+15.8)	1.4 (-2.0)	2.5 (+5.0)
FS	% (z score)	12.8 (+2.3)	27.9 (- 3)	32.9 (-1.1)	15.7 (-9.4)	37.5 (+0.48)	37 (+0.34)	15.5 (-10.4)	41.9 (+1.5)	27.1 (-3.6)
LVEF	%	27	50	47	28.8	51	48	15	51	52
RVFAC	%	24	33.8	35	20	38	38	22	34	36
TAPSE	mm	4.7	11	8	5	9.6	14	8	15	15
PAPs	mm Hg	30	25	25	60	25	25	25	25	25
LA AP diameter	cm	2.5	2.5	2.3	3.7	3.1	35	32 (+5.17)	21 (+2.1)	24 (+1.98)

Conclusion: Infant Jarvik 2015 LVAD, the smallest pump available conceived for children, can be successfully implanted in children. The use of intracorporeal CF is feasible in children and, from these preliminary results, it seems to be effective to induce recovery in dilated cardiomyopathy. These data should be validated in future trial.