Fetal aortic valvuloplasty — how to improve outcome?

Dangel J.1, Dębska M.2, Kolesník A.3, Kraska A.4, Dębski R.2

1. Perinatal Cardiology Department, 2nd Dept. of Obstetrics and Gynecology, Medical University of Warsaw
2. Department of Obstetrics and Gynecology, Centre of Medical Postgraduate Education, Warsaw, Poland
3. Cardiovascular Interventions Laboratory, Children’s Memorial Health Institute
4. Department of Cardiology, Children’s Memorial Health Institute

Introduction

Fetal balloon aortic valvuloplasty has been performed in few institutions all over the world. The two biggest centers published different outcome: biventricular circulation was maintained in 30% of Boston and 70% of Linz series. There is still no consensus what is the best treatment for neonates and infants after FBAV. Prenatal natural and post-FBAV history are still far from understanding. Knowing this we started the program of fetal cardiac interventions in 2011. The objective of this study was evaluation of preliminary results of FBAV at our institution.

Material and methods

— study period 2011 – 2013
— 32 FBAV in 29 fetuses
— eHLHS: 20 cases, severe AS + HF: 9 cases
— mother’s anesthesia: general (13 cases), total intravenous anesthesia (13 cases), sedation + local anesthesia (6 cases)
— fentanyl + atracurium to the umbilical vein of the fetus: all cases

Results

eHLHS
— improved flow across the aortic valve and improved LV function in all fetuses
— BV in 2 cases
— BV turned into the SV due to poor LV function in 3 cases
— severe AS + HF
— severe LV dysfunction, atretic foramen ovale and polyhydramnios in 3 cases
— only one survivor in this group

Summary of results and selected cases are presented in figures 1–4

Conclusions

FBAV can be successfully performed. The prenatal course after successful dilation of the aortic valve is unpredictable. Fetuses with severe AS and HF are at much higher risk than those with eHLHS. The best postnatal treatment of this difficult patients should be the topic of international discussion.

Abbrevations

AS – aortic stenosis
BAV – postnatal balloon aortic valvuloplasty
BV – biventricular circulation
eHLHS – evolving Hypoplastic Left Heart Syndrome
FBAV – Fetal balloon aortic valvuloplasty
HF – heart failure
IAS – interatrial septum
LA – left atrium
LV – left ventricle
RA – right atrium
RV – right ventricle
SV – single ventricle physiology

Summary of results and selected cases are presented in figures 1–4