CRITICAL NEONATAL AORTIC VALVE STENOSIS, OUTCOME OF PERCUTANEOUS BALLOON VALVULOPLASTY.

Hyder SN, Kazmi U, Kazmi T, Qureshi AU, Sheikh AM, M. Sadiq
1-Department of Paediatric Cardiology and Cardiac Surgery, The Children’s Hospital and Institute of Child Health, Lahore.

INTRODUCTION:
Critical congenital aortic stenosis (AS) represents a serious and life-threatening condition in neonates. The morphologic structure in neonates with symptomatic aortic stenosis represents a wide spectrum of abnormalities. Early intervention is mandatory in order to reduce LV stroke load and to prevent further myocardial damage. Balloon valvuloplasty (BVP) is the method of treatment in these very sick babies.

OBJECTIVES:
To evaluate immediate and midterm results after BVP in an infant population with critical aortic stenosis, giving special consideration to:

1. Relief of aortic stenosis,
2. Degree of aortic regurgitation (AR),
3. Left ventricular function and
4. Duration of freedom from reintervention

MATERIALS AND METHODS:
Retrospective follow up study conducted in a tertiary referral center from July 2006 to July 2010. Study was performed in 25 neonates who underwent aortic valve balloon dilatation. Follow up record till 48 months.

INTERVENTION:
Percutaneous balloon valvuloplasty was performed with mean balloon to annulus ratio of 0.8 -1. Aortogram was recorded in 45° LAO. Aortic annulus was also measured on angiography and always correlated with echo measurement. Tyshak (Numed USA) balloon was used in all patients.

We assessed the clinical & echocardiographic outcome.

1. Degree of re-stenosis,
2. LV function,
3. AR,
4. Need for re-intervention

RESULTS:
The median age at dilatation was 45 days (range from 6 days – 120 days). The median weight was 3.9 kg (1.9 kg-6.4kg). Mild aortic regurgitation developed in 12 patients while in one patient non-coronary cusp was perforated, leading to severe AR, needing surgery. There was one death after the procedure within one week.

COMPLICATIONS:

Early (0-30 days):
- VT needing cardioversion =1 (4%)
- Mild to Moderate AR =2 (8%)
- Rupture of aortic cusp leading to severe AR (needing cusp) =1 (4%)
- Death at day 5 post procedure(sepsis) = 1 (4%)

Late (1month-48 months):
- Death (Severe LV dysfunction) 2nd month = 1 (4%)

FOLLOW UP OF PATIENTS:

<table>
<thead>
<tr>
<th>Months</th>
<th>AR</th>
<th>AR</th>
<th>AR</th>
<th>Re-</th>
<th>Re-</th>
<th>LV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>stenosis</td>
<td>intervention</td>
<td>Dysfunction</td>
</tr>
<tr>
<td>6</td>
<td>10</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>24</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>26</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>48</td>
<td>11</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

CONCLUSIONS:
Balloon aortic valvuloplasty is safe and effective in critical valvular aortic stenosis in early infancy. The mortality is low (8%) and the incidence of severe AR is 4%. AR has not progressed in short and intermediate term follow up. LV function recovered in majority of patients (82%).