HEART-BEATING AORTIC ARCH REPAIR: PRELIMINARY RESULTS IN NEONATES AND INFANTS.

González-López, María-Teresa 1; Gil-Jaurena, Juan-Miguel 1; Pérez-Caballero-Martínez, Ramón 1; Pita-Fernández, Ana-María 1; Blanco-Bravo, Dorotea 2; Medrano-López, Constancio 3. Paediatric Cardiac Surgery 1, Neonatology 2 and Paediatric Cardiology 3 Departments. Gregorio Marañón Hospital. Madrid (Spain).

BACKGROUND: The strategies for aortic arch repair (AAR) in neonates/infants have evolved along the time. Simultaneous cerebro-myocardial perfusion (heart-beating technique) is the most recent modification, although it is not widely performed worldwide. We present our preliminary results using this strategy.

PATIENTS/METHODS: Since 2013 we included this technique as the standard approach for AAR: 18 patients (20 procedures; 2013–2014). Median age 50+/-27 days (range 3-270); median weight 3.7+/−1.4 kg (range 2.1-7).

- Hypoplastic aortic arch (HAA) was associated with:
  - Cor triatriatum: n=3 → Left atrium membrane resection.
  - VSD: n=3 (1 interrupted aortic arch) → VSD closure
  - Transposition of great arteries: n=2 (1 VSD) → Arterial switch operation.
  - Partial atrioventricular septal defect (AVSD): n=1 → AVSD repair.
  - Hypoplastic left heart syndrome: n=3 → Norwood-Sano procedure.
  - Double-outlet right ventricle: n=1 → Comprehensive procedure.
  - Severe aortic stenosis: n=2 → Aortic commissurotomy.

- HAA as isolated defect-(n=3).

Coronary perfusion (25°C) was maintained through a cardioplegia delivery system connected to the aortic cannula. When intracardiac repair was required, antegrade cardioplegia was delivered via the same catheter used for myocardial perfusion.

RESULTS: Average cardiopulmonary bypass time 168+/-73 minutes (range 93-292). Median myocardial ischemia time 30+/-11, (range 0-93): it was zero for 5 patients. Median selective cerebral perfusion 35+/-9 minutes (range 18-50).

Median follow-up (11+/-9 months; range 1-23)

<table>
<thead>
<tr>
<th>30-day mortality</th>
<th>Follow-up mortality</th>
<th>Freedom from redo</th>
<th>Freedom from percutaneous proced.</th>
<th>Echo- findings at follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5% (n=1, sp/ECMO)</td>
<td>0% (n=0)</td>
<td>88.3% (n=15)</td>
<td>82.4% (n=14)</td>
<td>▪ Slight stenosis right PA: n=1</td>
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<td>Redo incidence: 11.7% (n=2)</td>
<td>Percut. proc. incidence: 17.6% (n=3)</td>
<td>▪ Mild-to-moderate AoV stenosis: n=1</td>
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- Cavopulmonary shunt + AAR (aortic arch stenosis following Norwood).
- 1 underwent heart transplant 2 months later.

All the patients (n=17) remain with optimal functional class.

CONCLUSIONS: Selective/independent cerebro-myocardial perfusion is a safe/feasible technique with low rates of adverse events. Heart-beating AAR should be recommended due to the reduction of the myocardial ischemia time, although comparative results with classical techniques need to be addressed.

REFERENCES: