CO 2

Improved ventilation and hospital stay in premature babies after transcatheter closure of patent ductus arteriosus as compared to surgical ligation: A multi-center comparative study

Alban-Elouen Baruteau[a,b,*], William Regan[c,d], Nadir Benbrik[a], Shiv Sharma[c,d], Johanne Auriau[e], Bénédicte Romefort[a], Solène Prigent[a], Laurianne Le Gloan[a], Carles Bautista[c,d], Domenico Sirico[c,d], Patrice Guérin[a,b], Jean-Christophe Rozé[a], Giovanni di Salvo[c,d], Sandrine Foldvari[c], Alain Fraisse[c,d]
[a] *CHU Nantes, Cardiologie pédiatrique et congénitale, 44000 Nantes, France*
[b] *L'institut du thorax, Inserm, CNRS, UNIV Nantes, CHU Nantes, 44000 Nantes, France*
[c] *Royal Brompton Hospital and Harefield NHS Foundation Trust, Paediatric Cardiology Service, London, United Kingdom*
[d] *National Heart and Lung Institute, Imperial College London, London, United Kingdom*
[e] *CHU Grenoble, Cardiologie pédiatrique, 38000 Grenoble, France*
* *Corresponding author.*
E-mail address: albanelouen.baruteau@chu-nantes.fr
(A.-E. Baruteau)

Background Patent ductus arteriosus (PDA) is very common in extremely low birth weight babies and may contribute to prolonged mechanical ventilation, bronchopulmonary dysplasia, renal failure, periventricular leukomalacia and necrotizing enterocolitis. When PDA closure is indicated with failure of medical therapy (cyclooxygenase inhibitors or paracetamol), surgical ligation is usually performed with excellent results. Transcatheter closure has been recently developed with promising results but comparative studies with surgical ligation are lacking.
Objectives To compare results and outcomes after transcatheter closure using the Amplatzer Piccolo device versus surgical closure in 2 matched groups of pre-term infants weighing ≤ 3000 g.
Methods One hundred and forty seven babies (3 tertiary centres) were retrospectively analysed. Sixty-four patients who underwent transcatheter closure were compared with 83 matched surgical patients, using Wilcoxon signed-rank tests.
Results PDA closure was successful in all surgical and transcatheter cases. During NICU course, mortality was 6.3% ($n=4$) after transcatheter closure and 12% ($n=10$) after surgery ($P=0.24$). Median duration of mechanical ventilation was shorter after transcatheter closure than after surgical ligation (3 vs. 5 days, $P=0.035$). In babies undergoing duct closure before 4 weeks of age the difference between transcatheter and surgical closure for mechanical ventilation during the NICU course was even more pronounced (3 vs. 9 days, $P=0.022$). When transcatheter closure was performed before 4 weeks, babies were discharged home earlier as compared to those who underwent closure later in life (39 + 1 vs. 41 + 5 weeks, $P=0.021$). Such difference was not found in the surgical group.
Conclusion Transcatheter PDA closure in low birth weight babies is safe, effective and associated with improved mechanical ventilation as compared to surgery. It may offer shorter hospital stay when performed earlier in life.
Keywords Patent ductus arteriosus; Preterm; Transcatheter closure; Piccolo device
Disclosure of interest Alban-Elouen Baruteau and Alain Fraisse are proctors for Abbott Medical. The other authors declare that they have no competing interest.

https://doi.org/10.1016/j.acvdsp.2019.06.003

CO 3

Liver stiffness: A useful tool in the longitudinal follow-up of patients with Fontan circulation

Mansour Mostefa-Kara[1,2,3,*], Victor de Lédinghen[4,5], Zakaria Jalal[1,2,3], Xavier Iriart[1], Julie Chabaneix-Thomas[1], Jean-Baptiste Hiriart[4], Julien Vergnol[4], Juliette Foucher[4], Pierre-Emanuelle Seguela[1], Jean-Benoît Thambo[1,2,3]
[1] *Bordeaux University Hospital (CHU), Department of Paediatric and Adult Congenital Cardiology, 33600 Pessac, France*
[2] *IHU Liryc, Electrophysiology and Heart Modeling Institute, fondation Bordeaux Université, 33600 Pessac- Bordeaux, France*
[3] *Inserm, Centre de recherche Cardio-Thoracique de Bordeaux, U1045, 33000 Bordeaux, France*
[4] *University Hospital of Bordeaux, Department of Hepatology and Gastroenterology, Pessac, France*
[5] *Inserm 1053, Université Bordeaux, Bordeaux, France*
* *Corresponding author.*
E-mail address: mansourmostefakara@gmail.com
(M. Mostefa-Kara)

Background Liver diseases usually appears after a Fontan operation (FO), often without obvious clinical features, but it may lead to life-threatening complications.
Objective We aim to assess the usefulness of the liver stiffness (LS), assessed by transient elastography (TE), in the follow-up of Fontan patients.
Material and method In our center, patients with a Fontan circulation (FC) were prospectively evaluated since 2012 through an annual work up including physical examination, laboratory tests, transthoracic echocardiography and TE. This work up was also performed in case of clinical complications, which were classified as follows: cardiac complications (including arrhythmias or catheter interventions) and subdiaphragmatic complications (including clinical sign of portal hypertension(PH) or protein losing enteropathy (PLE)).
Results Forty-eight patients (21.7 ± 8.2 years of age and 9.7 ± 6.5 years post-Fontan) were included, 28 of them (58%) had least two LS measurement. Mean time between first and last LS measurements was 3.27 ± 1.9 years. Mean LS at baseline was 15.3 ± 6.9 kPa (4.3—47.2 kPa) No correlation was found between LS and age ($r=1$, $P=0.73$), or time since FO ($r=0.3$, $P=0.64$). LS did not vary regarding the presence of a fenestration (15 ± 6.8 vs. 15.1 ± 6.7 kPa, $P=0.82$). During the follow-up, a clinical complication occurred in 19 patients (39.6%) including 8 cardiac complications and 11 subdiaphragmatic. Among the subdiaphragmatic complications group, 3 had PLE and 8 developed PH. LS was significantly higher in patient with liver complication (17.2 ± 7.7 vs. 13.8 ± 5.9, $P<0.01$). Patient with an increasing LS value during the follow-up had a higher complications rate than patients with a decreasing or unchanged LS (4/11 (36%) vs. $n=5/17$ (29%); $P<0.04$).
Conclusion LS measurement using TE is a good tool for the non-invasive follow-up of patient with FC. Indeed, a significate elevation of the LS is associated with the occurrence of liver and/or cardiac complications.
Keywords Univentricular disease; Liver disease; Fontan circulation; Liver stiffness; Elastography
Disclosure of interest The authors declare that they have no competing interest.

https://doi.org/10.1016/j.acvdsp.2019.06.004