Regional cerebral oxygen saturation (rScO₂) in a cardiac muscarinic receptor overexpression rabbit model

A. Livolsi¹,², *, P. Bousquet¹, N. Jbilou², F. Hueber², P. Helms², C. Olexa¹, L. Monassier¹

¹ Neurobiology and Cardiovascular Pharmacology Laboratory, Strasbourg, France
² Pediatric Cardiology Unit, Strasbourg, France

* Corresponding author.
E-mail address: Angelo.Livolsi@chry-strasbourg.fr (A. Livolsi)

Introduction Near-infrared spectroscopy (NIRS) can be used as a non-invasive monitoring technique for regional cerebral oxygenation (rScO₂). We studied basal rScO₂, after atropin blockade and after hypertensive testing by phenylephrin in a cardiac muscarinic receptor overexpression rabbit strain with severe cardiac pauses (H) compared to a normal rabbit strain (N).

Results

— rScO₂ values are systematically higher in H rabbits compared to N rabbits: (H = 75.6% ± 5.6 vs N = 60.7% ± 5.7, n = 6 in each group, P < 0.05);
— Atropin decrease rScO₂ in both groups, but this reduction is more marked in H rabbits (Fig. 1);
— During the phenylephrin test, the cardiac pauses in the H group are longer than in the N group (H: 24 285 ms ± 8 837 [n = 6] vs N: 3 566 ms ± 1 455 [n = 8]).

We observed a progressive hypoxia with rScO₂ decrease in both groups during the test. Unexpectedly, the rScO₂ reduction is not as pronounced in H rabbits with severe cardiac pauses as in the N group (Fig. 1).

Conclusion These data support the hypothesis that: A higher rScO₂ by NIRS could reflect a higher central muscarinic receptor density, protecting brain against hypoxia. RsCO₂ could be a non-invasive muscarinic receptor overexpression marker, useful in vasovagal syncope study.

Disclosure of interest The authors have not supplied their declaration of conflict of interest.

http://dx.doi.org/10.1016/j.acvd.2014.07.037

ALCAPA long-term follow-up and prognosis

J. Mitchell¹, J. Ninet¹, A. Bozio², O. Metton¹, R. Henaine¹, M. Veyrier², M. Bakloul², L. Bossel³, C. Ducrèux², S. Di Filippo²,³

¹ Cardiothoracic Surgery, Cardiovascular Hospital Louis Pradel, University Medical Center of Lyon, France
² Pediatric and Congenital Heart Disease, Cardiovascular Hospital Louis Pradel, University Medical Center of Lyon, France
³ Cardiothoracic Non-invasive Imaging, Cardiovascular Hospital Louis Pradel, University Medical Center of Lyon, France

* Corresponding author.
E-mail address: sylvie.di-filippo@chu-lyon.fr (S. Di Filippo)

The aim of the study was to assess the long-term outcome of patients with ALCAPA.

Methods Retrospective single-center analysis of patients who underwent surgery for ALCAPA from 1980 to 2012. Surgical techniques, demographics, echocardiographic parameters and outcomes were collected. Patients were divided into group I (< 2 years at diagnosis, group II: > 2 years).

Results Forty-eight patients (28 females) were included, median age 6 months (min 4 months, max 65 years), median weight 6 kg (min 1.9 kg): 36 in group I and 12 in II. HF was patent in 39 patients (mean age 4 years), 9 were asymptomatic (mean age 10 years), Qwave on ECG was present in 87% of cases. Mean LVSF = 24.2% (group I = 26.6% vs II = 37.7%, and 16.6% in patients < 6 months of age), LVEDD and LVESD Z-scores were respectively +2 and +5 in groups I and II; 73% had MR: severe in 6%, moderate in 46%, mild in 21%. Left coronary artery ostium located in the left posterior sinus in 31 cases, right posterior sinus in 12 and in right pulmonary branch in 4. Direct coronary artery reimplantation was performed in 71%, Takeuchi technique in 6%, Meyer technique in 20% and LCA ligation in 3%. Mean age at surgery was 29 months, mean weight 9 kg. Postoperative mechanical circulatory support was required in 3 cases, who had more severe HF, lower LVSF and longer bypass duration. Mean FU was 81 months (6 to 312 months). Freedom from
reoperation was 100% at 1 year, 91% at 10 years and 88% at 20 years. LVSF increased by 20% in the early postoperative course and 36% at late FU. MR improved significantly in most of the cases. Overall mortality was 33% (15 in group I died before day 30, none in group II), decreasing over time from 55% to 11%, and was lower in patients who had direct reimplantation. Q wave disappeared in 82% of the cases; 93% of survivors were asymptomatic at latest evaluation.

Conclusion  ALCAPA patients have good long-term survival and outcome. Age > 2 years at diagnosis and direct implantation are factors of favorable prognosis.

Disclosure of interest  The authors have not supplied their declaration of conflict of interest.

http://dx.doi.org/10.1016/j.acvd.2014.07.038

35 Isolated proximal anomalous connections of the coronary arteries: A prospective observational cohort study of more than 450 patients (ANOCOR study)

Pierre Aubry1,2, Xavier Halna du Fretay1, Patrick Dupouy2, Emmanuel Boiffard3, Luc Maillard4, Philippe Commeau5, Phalla Ou1, Jean-Michel Juliard1, for the ANOCOR investigators

1 Groupe Hospitalier Bichat-Claude Bernard, Paris, France
2 Hôpital Privé d’Antony, Antony, France
3 Centre Hospitalier Départemental, La Roche-sur-Yon, France
4 Clinique Aixum, Aix-en-Provence, France
5 Polyclinique les Fleurs, Ollioules, France

* Corresponding author.
E-mail address: pcaubry@yahoo.fr (P. Aubry)

Isolated proximal anomalous connections of the coronary arteries (ANOCOR) are rare congenital abnormalities associated with a wide spectrum of clinical presentations and anatomic patterns (Fig. 1). The prognosis of the ANOCOR depends mainly on the initial course of the ectopic vessel. But our knowledge of pathophysiology and natural history remains poor. Large-scale prospective multicenter registries dedicated to ANOCOR are needed to achieve a better understanding of these congenital coronary abnormalities. The ongoing ANOCOR study began in January 2010 with an inclusion period of 3 years. More than 450 young people (≥ 15 years old) and adults have been included by interventional cardiologists from the Interventional Working Group (GACI) of the French Society of Cardiology. A 5-year follow-up was scheduled. The design of the ANOCOR study will be presented.

Fig. 1  Axial computed tomography image showing an anomalous connection of the left coronary artery (arrow) with the opposite sinus close to the normal connection of the right coronary artery (arrow head).

Disclosure of interest  The authors have not supplied their declaration of conflict of interest.

http://dx.doi.org/10.1016/j.acvd.2014.07.039

36 Tetralogy of Fallot complete repair: Humanitarian chains versus French native children

A. Cazavet1,*, S. Hascoet2, Y. Dulac2, X. Alacocque2, R. Fesseau2, L. Berthomieu3, G. Chausseray1, D. Roux4, B. Leobon2, P. Acar2

1 Service de Chirurgie cardio-vasculaire, Hôpital Rangueil, CHU Toulouse, France
2 Service de Cardiologie pédiatrique et congénitale, Hôpital des enfants, CHU Toulouse, France
3 Service de Pédiatrie–Réanimation pédiatrique polyvalente, Hôpital des enfants, CHU Toulouse, France

* Corresponding author.
E-mail address: cazavet.a@free.fr (A. Cazavet)

Background  French humanitarian chains promote surgery for children with congenital heart diseases coming from developing countries. We assessed the results following complete repair of tetralogy of Fallot (TOF) in relation to the origin of patients.

Methods  A 4-year retrospective review of 73 consecutive patients with TOF repair was performed. Children were divided into two groups: French children (group A, n = 38) and children from developing countries (group B, n = 35).

Results  Preoperative status differed between the two groups. Children from group B were older (0.82 vs 7.18 year-old, P < 0.001), with a lower BMI (16 vs 14 kg/m², P < 0.001). They were more symptomatic with lower oxygen saturation (90% vs 83%, P = 0.007) combined with a higher level of plasmatic hemoglobin (13.1 vs 16.1 g/dL, P < 0.001). Proportion of preoperative palliative surgery was higher although not significant in group A (18% vs 6%, P = 0.156). There wasn’t any irregular form due to coronary abnormality in the two groups. Preoperative echography showed no difference concerning the rate of pulmonary annulus Z Score < −3 (39% vs 43%, P = 0.956). Results of surgery showed no differences in terms of aortic cross-clamping time (65 vs 60 min, P = 0.235) or rate of trans-annular patch insertion (37% vs 31%, P = 0.810). Postoperative course didn’t significantly differ between the two groups. There was no death, two early reoperations (one for bleeding and one for residual VSD) and one late reintervention for residual supra-valvular stenosis in group A after a median follow-up time of 1.8 years. There was one early death (2.8%) and one early reoperation for bleeding in group B after a median follow-up time of 30 days. All were in sinus rhythm.

Conclusion  Elective surgery for TOF repair carries low risk of morbi-mortality. Despite worst preoperative status, children from humanitarian chains can be treated safely by complete repair. Palliative surgery must be reserved for children presenting a marked cachexia profile.

Disclosure of interest  The authors have not supplied their declaration of conflict of interest.

http://dx.doi.org/10.1016/j.acvd.2014.07.040