Introduction

There is an association between congenital heart disease (CHD) and neurodevelopmental delay (42%). Brain injury can be minimized by adequate perfusion control based on NIRS (6% vs 26%): a low NIRS index under 40% is a good predictor of brain lesion. Here, monitoring must be foolproof and easy to understand. Assessed parameters must imply the opportunity of an early intervention by the physician. Alas, NIRS is assessed peri-operatively. Our aim was to find an earlier predictor that could be used to assess brain vulnerability pre-operatively.

Methods

We prospectively enrolled 14 children (mean ± SD: age = 2.2 ± 3.3 yo.; weight = 9.4 ± 9 Kg) who underwent cardiopulmonary bypass for a CHD repair surgery. Cerebral oxygen saturation (rSo2) was monitored by NIRS. We calculated the difference between NIRS level before the procedure and during the CPB. We compared the rSo2 data with the physiologic brain status (alpha, delta or theta). Linear regression based on Beta index shows two significant relationships. The preoperative beta spectral index could be linked to the CHD type too. Nevertheless, beta index could be a predictor of brain vulnerability. A high Beta index preoperatively can be minimized by adequate perfusion control based on NIRS (6% vs 26%).

Results

The NIRS decreased during CPB. The NIRS value was 24.21% (± 16.28). Two patients had a NIRS impairment below 40% (14.3%). There was no correlation between NIRS and either the spectral index alpha, beta, delta, theta. Linear regression based on Beta index shows two significant relationships. The preoperative beta spectral index is correlated with the NIRS (P = 0.03* and with the minimum NIRS level during the CPB (P = 0.01).

Conclusion

Preoperative Beta spectral index is therefore an early predictor of brain vulnerability. A high Beta index preoperatively could predict a low NIRS index during CPB and therefore a possibility of brain injury. That was a preliminary study and our findings need to be validated onto a wider panel of patients. Beta index is probably could be linked to the CHD type too. Nevertheless, beta index could help to design targeted procedure for brain protection adapted to each type of patient.

Disclosure of interest

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

* p value less than 0.05 - significant.

http://dx.doi.org/10.1016/j.acvd.2014.07.030

28

Marfan syndrome diagnosed during childhood: Focus on cardiac events in the French database

S. Hascoet (MD)1,*, Y. Dulac (MD)2, J.B. Ruidavets (MD)3, T. Edouart (MD, PhD)4, F. Arnoult (MD)5, O. Milleron (MD)6, C. Stheneur (MD)7, B. Chevallier (MD, PhD)8, C. Zordan (MD)9, S. Odent (MD, PhD)10, N. Philip (MD, PhD)11, L. Olivier-Favre (MD, PhD)12, B. Leheup (MD)13, S. Dubois-Girod (MD)14, P. Acar (MD, PhD)14, J. Ferrières (MD, PhD)14, G. Jondeau (MD)14

1 Department of paediatric cardiology, centre de compétence pour le syndrome de Marfan et apparentés, Children Hospital, Inserm/UPS UMR 1048, I2MC, CHU de Toulouse, Toulouse, France
2 Department of paediatric cardiology, centre de compétence pour le syndrome de Marfan et apparentés, Children Hospital, CHU de Toulouse, Toulouse, France
3 Department of paediatric cardiology, centre de compétence pour le syndrome de Marfan et apparentés, Children Hospital, CHU de Toulouse, Toulouse, France

Objectives

Life expectancy of patients with Marfan syndrome has increased, due to earlier diagnosis, better familial screening, regular follow-up (FU) and prophylactic aortic surgery (PASu). Incidence of events in affected patients recognized during childhood is unknown.

Methods

Four hundred and sixty-five patients with Marfan syndrome, diagnosed before 18 years old were included in the French multicenter database. Cardio-vascular events (death, aortic dissection or PASu) were recorded.

Results

A cardio-vascular event occurred in 25 patients (5.4% 95CI 3.5–7.8%), including PASu (n = 20, 4.3% 95CI 2.5–6.2%), aortic dissection (n = 3, 0.6% 95CI 0.0–1.4%) and deaths (n = 2, 0.4% 95CI 0.0–1.0%) (Appendix A). Sixteen events (64%) occurred before 19 years old (Median 15.0, min. 2.8, interquartile 11.7–16.3; PASu n = 12, deaths n = 2 and dissection n = 2). An aortic surgery was performed in 23 patients (4.9%, 95CI 3.0–6.9%), including a Bentall procedure with mechanical aortic valve in 10 (43.5%), a valve sparing surgery in the remaining 13 (56.5%) and a supra-coronary graft in 4 (17.4%, dissection: n = 2 and PASu: n = 2). Mean age at the date of PASu was 17.1 ± 6.5 year-old. Events occurred before or at inclusion in the database in 8 patients (32.0%) (PASu n = 5, dissection n = 2, death n = 1). Dissection was observed before inclusion in 2 patients and during pregnancy in 1 patient. Kaplan-Meier survival estimate indicates that 95% of patients remained free from events at eighteen and 78% at thirty years old.

Conclusion

Prophylactic surgery for enlarged aorta is the main cause of cardiac events in patients with Marfan syndrome diagnosed during childhood. A quarter of them have a cardiac event before thirty years old.

Disclosure of interest

The authors have not supplied their declaration of conflict of interest.
Grown-up congenital heart disease: Continuum of care between pediatric and adults cardiologists in Reims University Hospital

A. Charbonneau, A. Akhavi, J.P. Chabert, F. Lesaffre, D. Metz, P. Morville, P. Mauran

Background Congenital heart disease (CHD) are seldom cured and the increasing grown-up congenital heart disease (GUCH) population still needs specialized follow-up that has to be organized. In Reims University Hospital, it’s about 10 years ago that pediatric and adult cardiologists initiated a multidisciplinary clinic for follow-up of GUCH patients.

Objectives The aim of the present study is to describe the GUCH population followed in our hospital (CHD, treatments, outcomes, complications, social issues) and the organization of their medical care.

Methods This is a retrospective and observational study including patients with CHD which were over 18 years old in September 2013 and were seen in Reims University Hospital at least once between January 2008 and September 2013.

Results Our GUCH population was 475 patients. Median age was 25.1 years old. Sex ratio was 0.82. Among CHD, univentricular hearts were 10%. Thirty-one percent of patients were taking cardiologic medications. Cardiac surgery had been performed in 62.1%. Interventional catheterization had been undertaken in 19.6%. Regarding the outcome, main complications were arrhythmias (17%), heart failure (5%), pulmonary hypertension (4%), endocarditis (1.2%), death (1.9%). Social supervision was needed in 14.3%.

Conclusions After reaching adulthood, patients with CHD need continuous follow-up because complications in GUCH patients are not uncommon. Although transition between adolescence and adulthood is supposed to be at high risk of breaking this follow-up, the present study shows that it is possible to minimize this event. We feel that an organized continuum of care between pediatric and adults cardiologists, as we settled in our hospital, could be an effective way to meet the special needs of GUCH patients.