Conclusion Remnant risk for coarctation in a foetal population with physiological late gestation asymmetry is < 5%. Prenatal counselling can be reassuring since the majority of infants will have a normal heart. However early cardiac evaluation of these newborns remains recommended to exclude the rare event of postnatal coarctation in absence of prenatal predictive signs.
Disclosure of interest The authors declare that they have no competing interest.

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Performance of the ''GUCH morbidity and mortality scores'' in cyanotic and non-cyanotic adults with congenital heart disease

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Background Cyanotic adults with congenital heart disease (ACHD) rely on life-sustaining adaptations to their chronic cyanosis and are at risk of adverse consequences if such adaptations are out of balance. They may benefit from surgical treatment options that were not available during their childhood. The ''GUCH morbidity and mortality scores'' were specifically designed to predict risks after surgery in ACHD and included comorbidities and patient age. We aim to assess their performance in cyanotic compared to non-cyanotic ACHD.
Methods Data of all consecutive adults who underwent CHD surgery in 2005—2016, were collected. Mortality was defined as hospital mortality or mortality within 30 days following surgery. Morbidity was defined as occurrence of one or more of the following complications: renal failure requiring dialysis, neurological deficit persisting at discharge, atrioventricular block requiring pacemaker implantation, mechanical circulatory support, phrenic nerve injury and unplanned reoperation. The performance of the GUCH scores was assessed using the area under the receiver operating characteristics curve (C-index, 95% CI).
Results We evaluated 824 operations including 99 performed in cyanotic ACHD. The mean age at operation was 34 ± 13 years (18—72 years). Cyanotic patients had higher hospital mortality and morbidity than non-cyanotic patients (11.1% vs. 2.4%, $P < 0.0001$; and 22.2% vs. 8.4%, $P < 0.0001$ respectively). C-index for GUCH mortality score in cyanotic and non-cyanotic ACHD were not different: 0.722 (0.536—0.907) and 0.800 (0.712-0.887) ($P = 0.44$), respectively. C-index for GUCH morbidity score was lower in cyanotic than in non-cyanotic ACHD: 0.483 (0.335—0.632) vs. 0.671 (0.601—0.741) ($P = 0.027$).
Conclusion GUCH mortality score is efficient in cyanotic ACHD patients. However, the GUCH morbidity score should be refined in these patients.
Disclosure of interest The authors declare that they have no competing interest.

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Mid-term outcomes after percutaneous pulmonary valve implantation in complex right ventricular outflow tracts using the ''folded'' Melody® valve technique

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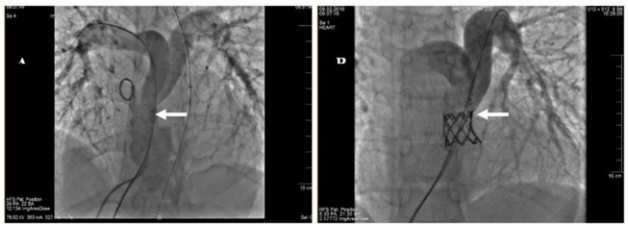
Background Percutaneous pulmonary valve implantation (PPVI) using Melody® valve has been validated as a valuable therapeutic option for the management of right ventricular outflow tract (RVOT) dysfunction but remains challenging. The ''Folded'' modification of the Melody® valve has been reported as a safe and feasible technique in complex RVOT. We sought to evaluate mid-term outcomes in a multicentre cohort who underwent PPVI using the ''folded'' Melody® valve technique.
Methods Patients who underwent PPVI using a Foled Melody® between April 2012 and November 2018 in 6 European tertiary Centerswere retrospectively included.
Results ''Folded'' Melody® valve technique was successfully performed in 28 patients (mean age = 17.7 ± 10 years old). Indications were: short RVOT and early bifurcation of pulmonary arteries in 12 (42.8%) (Fig. 1), bioprosthetic valves in 10 (35.7%), coronary arteries proximity in 4 (14.3%) and prevention of retrosternal compression in 2 (7.2%). No complication occurred during procedures. All patients had excellent hemodynamic results. Mean transvalvular peak velocity decreased from 3.8 ± 0.86 m/s before PPVI to 2.4 ± 0.55 m/s in the immediate post-PPVI period. Only 5 patients had trivial pulmonary regurgitation (PR) at discharge. After a median follow up (FU) of 27 ± 17.9 months, all patients were alive, and all, but 3 patients, were free from reintervention: 1 patient (3.5%) devel-



Folded Melody valve implantation in a patient with Truncus arteriosus type 2A with short RVOT and early PA bifurcation. (A) Angiogram showing short RVOT with early PA bifurcation (white arrow) and free PR; (B) Angiogram after Folded valve implantation showing good valve function (white arrow). *PA, pulmonary artery; PR, pulmonary regurgitation; RVOT, right ventricular outflow tract.*

Fig. 1

oped Melody® valve infective endocarditis 3 months after PPVI and underwent RVOT surgical replacement; Two underwent pulmonary artery stenting 2 and 4 years after of PPVI, but the lesions were not related to the Folded valve. At last FU mean transvalvular peak velocity was 2.6 ± 0.66 m/s and only 5 (17.8%) patients had mild or less PR. No stent fractures were observed.

Conclusion The ''folded valve technique'' is a safe and feasible modification of the Melody® valve which provides favourable mid-term results without increased rate of valve related complications.

Disclosure of interest AE, MG, JBT and YB act as proctors for Medtronic Inc.; ZJ is consultant for Medtronic. Other authors have no conflict of interest to declare.

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Infective endocarditis in children: A 10-year multicentric study

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Background Congenital heart disease (CHD) represents a predisposing condition for the development of infective endocarditis (IE). In recent years, the reduction in the incidence of rheumatic heart disease, advances in cardiac surgery and the increased use of long-term central venous catheters (CVC) in subjects without CHD have changed significantly the epidemiology of the disease. We sought to evaluate the epidemiology of IE in children in the north of France.

Method We retrospectively included all children < 18 years hospitalised for IE in 2008-2018 in 4 tertiary centres. Demographic, underlying conditions, echocardiography, microbiology and outcomes were collected.

Results We identified 64 episodes of IE in 60 children. Incidence was 3,07/10 000 paediatric hospitalisations. Median age was 8 years [0—13] and distribution was bimodal with peaks in infancy and adolescence. An organism pathogen was isolated in 87% of cases. The most common was Staphylococcus aureus (34%) then streptococcus (25%). At echocardiography, anomalies were vegetations ($n = 32$), new valvular regurgitations ($n = 10$), peri valvular abscesses ($n = 2$). Among cohort, 45 had a CHD (70%), 7 were pre-term birth (11%), 2 had long-term CVCs and 10 no predisposition. Non-CHD patients were significantly younger than CHD patients (Table 1). Anomalies at echocardiography and identification of pathogen were more common in non-CHD patients. Among CHD patients, 38 (84%) had previous heart surgery and 10 presented an IE < 2 months after surgery. Pulmonary bioprosthetic valve were involved in 22 cases and mechanical valve in three. Cardiac surgery was needed in 26 cases (41%) including valve replacement in half of them. Complications of IE occurred in 35 (58%) including emboli, mycotic aneurysm, cerebral haemorrhage and myocardial abscess.

Conclusion IE mostly occurred in predisposed children. IE in CHD and non-CHD patients has different features, diagnosis is more arduous and needs more investigation as nuclear medicine imaging.

Disclosure of interest The authors declare that they have no competing interest.

Table 1 Characteristics according to cardiac status.

Variable	CHD ($n = 45$)	No CHD ($n = 19$)	*P*
Age at admission, median, (IQR) Y	9 [5—14]	2 [0—10]	< 0.01
Length before diagnosis, median, IQR, D	5 [2—13.5]	7 [5—10]	0.15
Missing	7	2	
Length of stay, median, (IQR), D	28 [15—40]	42 [19—55]	0.2
Central veinous catheter, *n* (%)	6 (13.3)	9 (47)	< 0.008
Isolation of an organism pathogen *n* (%)	33 (73)	18 (94)	0.01
TEE positive for IE *n* (%)	28 (62)	17 (89)	< 0.02
Outcome *n* (%)	29 (64)	10 (52)	0.4
Heart surgery for IE *n* (%)	21 (47)	7 (37)	0.26
Valve replacement *n* (%)	12 (26)	1 (5.2)	< 0.05
Nuclear medicine imaging *n* (%)	16 (35)	2 (10.5)	< 0.05

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Anterograde blood flow associated with Blalock-Taussig shunts does not modify pulmonary artery growth compared with Blalock-Taussig shunt alone

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Objective The difference between extreme Tetralogy of Fallot (T4F) and pulmonary atresia with ventricle septal defect (PA/VSD) is the anterograde pulmonary blood flow. It is speculated that the association of modified Blalock-Taussig shunt (mBTs) and additional pulmonary blood flow favours shunt thrombosis but promotes better pulmonary arterial (PA) growth. This study sought to compare (PA) growth after mBTs shunt between T4F and AP/VSD.

Methods From 1995 to 2018, 79 mBTs were performed in infants (< 1 years), 45 for T4F and 34 for AP/VSD. Using a 1:1 propensity score match analysis, 38 patients were included ($n = 19$ in each group). The primary outcome was operative mortality, mBTs thrombosis, and PA growth.

Results After matching, the preoperative Nakata was similar ($101 \pm 8\,mm^2/m^2$ in T4F; 106 ± 8 in AP/VSD $P = 0.75$). The age and weight were similar ($24,3 \pm 5$ days, 3.3 ± 0.5 kg in T4F; $24,15 \pm 4$, 3.3 ± 0.9 in AP/VSD $P = 0.84$ and $P = 0.77$ respectively). The mBTs size was similar (4.15 ± 0.5 mm in T4F; 4.3 ± 0.5 in PA/VSD $P = 0.35$). There was no difference in in-hospital mortality ($n = 0$, in T4F; $n = 2$, 11% in AP/VSD, $P = 0.14$) and mBTs thrombosis (3,16% in T4F; 2,11% in AP/VSD, $P = 0.18$). The time to extubation tended to be longer in T4F (5 ± 1days vs. 2 ± 1 $P = 0.06$). The left and right PA diameter at time of biventricular repair were similar (7.5 ± 0.5 mm, 7 ± 0.2 in T4F; 8.1 ± 0.7 mm, 7 ± 1 in AP/VSD $P = 0.43$ and $P = 0.78$, Fig. 1) and the Nakata delta ($112 \pm 23\,mm^2/m^2$ in T4F; 110 ± 17 in AP/VSD $P = 0.78$). Median time to complete repair was the same in the PA/VSD (12.26 [3.9-25] months) compared with T4F (9.7 [6.2—41.1] months) $P = 0.87$). The interstage reintervention were similar (3.16% in T4F; 4.22% in AP/VSD, $P = 0.9$).