Pulmonary regurgitation after repaired tetralogy of Fallot in adults

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Introduction: Tetralogy of Fallot (TOF) includes: right ventricular (RV) hypertrophy, RV outflow tract obstruction, ventricular septal defect (VSD), and overriding aorta.[1] Long-term complications after complete TOF surgical repair, especially after transannular patch repairs, include; pulmonary regurgitation (PR), RV dysfunction, arrhythmias, and increased risk of sudden cardiac death.[2,3] Optimal timing for severe PR intervention (implantation of a bioprosthetic pulmonary valve or transcatheter pulmonary valve implantation) is difficult to determine.[4]

Case report: We present two patients with TOF, a 23-year-old man (M) and a 49-year-old woman (W), who were hospitalized for acute heart failure. In M total TOF correction was performed at the age of 3 with transannular patch repair of PA, postprocedural RVOT PG was 30 mmHg. W underwent TOF correction at the age of 5. Clinical examination in both patients confirmed a systolic murmur II/VI with punctum maximum above the pulmonary valve. A right bundle branch block was identified on the 12-lead electrocardiogram in both. Laboratory analysis demonstrated elevated levels of N-terminal pro–B-type natriuretic peptide (M 7677 pg/ml, W 968 pg/ml). Echocardiography (TTE) in M patient demonstrated a dilated, volume-overloaded RV with moderate RV base dilatation and significant RV apical dilatation, and mildly reduced RV systolic function (fractional area change 34%, TAPSE 14 mm, s' 8.9 m/s), and a sever PR (PTH 79 ms, present PA reverse flow, regurgitation jet occupied 80% of the RVOT width, maxPG 30 mmHg, RV systolic pressure 35 mmHg), LV size and function were normal, without VSD (**Figures 1** and **2**). TTE in W (**Figure 3**) showed a dilated, volume-overloaded RV with leftward shift of the interventricular septum in diastole and preserved RV systolic function (FAC 50%, TAPSE 20 mm), with significant PR (regurgitation jet occupied 80% of the RVOT width, VC 12 mm, maxPG 17 mmHg, RV systolic pressure 32 mmHg). They were both referred to tertiary adult congenital heart diseases (ACHD) center were the diagnosis was confirmed. W is a candidate for PV operation, and for M optimal medical treatment was recommended considering comorbidities.

FIGURE 1. 23-year-old man: Volume-overloaded right ventricle with leftward shift of the interventricular septum in diastole.

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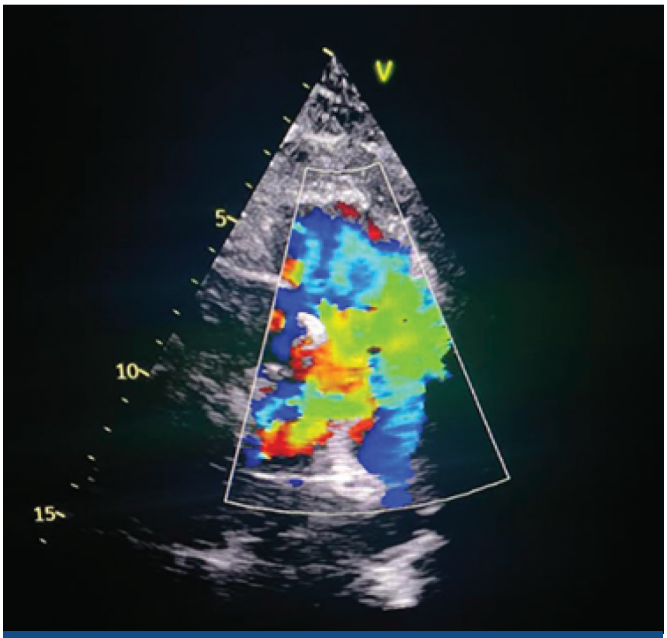

FIGURE 2. 23-year-old man: Color Doppler of the right ventricular outflow tract and branch pulmonary arteries in parasternal short axis view with the retrograde flow originating from the distal branch pulmonary arteries.

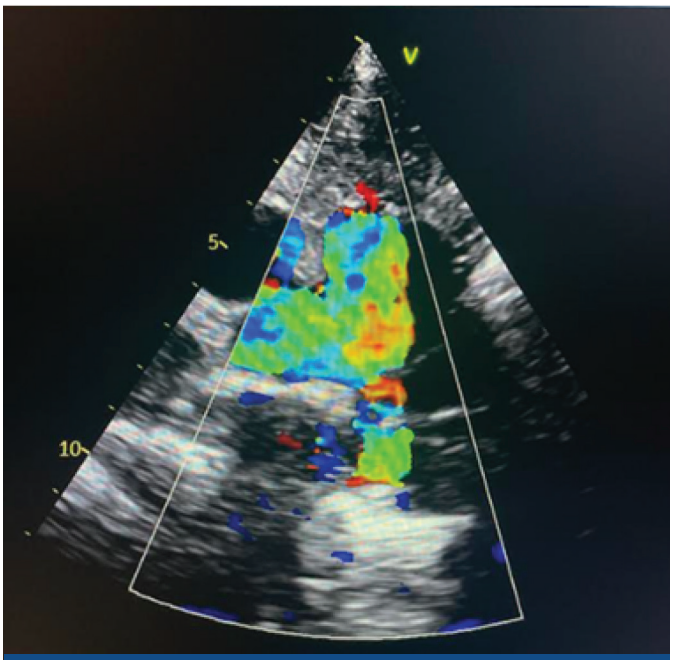

FIGURE 3. 49-year-old woman: Color Doppler of the right ventricular outflow tract and branch pulmonary arteries in parasternal short axis view.

Conclusion: These cases highlight the importance of echocardiographic detection of significant PR in TOF repair patients to prevent the development of RV dysfunction.

LITERATURE

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