

Assessment of pulmonary regurgitation in adults with surgical repair of tetralogy of Fallot

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REPAIR OF TETRALOGY OF FALLOT WAS A MAJOR advance in cardiac surgery. After intervals of 20 to 30 years, it is now clear that pulmonary regurgitation is an important residual complication.

Our patient, an asymptomatic nurse, seen 25 years after surgical repair at the age of 18 months, had a left parasternal heave, a single second heart sound with absence of the pulmonary component, and a loud early short diastolic murmur. The phonocardiogram (Fig. 1a) demonstrated first (S1) and second (S2) heart sounds, along with the early short diastolic murmur of pulmonary regurgitation (PR), the changing amplitude of which coincided with that of the velocity of pulmonary regurgitant flow as shown on the Doppler trace (Fig. 1b). Doppler interrogation demonstrated the regurgitation to be severe, since retrograde flow across the pulmonary valve ceased in mid-diastole, with limited duration of predominantly laminar regurgitant flow. The late diastolic forward flow, shown by the a wave, which mainly coincided with atrial systole, suggested restrictive right ventricular physiology. Cine cardiovascular magnetic resonance of the pulmonary trunk (Fig. 1c) showed almost free pulmonary regurgitation (arrows). Flow-mapping through a plane transecting the pulmonary trunk

(Fig. 1d) allowed a trace (Fig. 1e) to be plotted indicating the volume of flow to the lungs, which was comparable with the Doppler flow velocity trace. The pulmonary regurgitant fraction, derived from integration of areas contained by forward and reversed flow curves, was 33%, which we consider to be significant for this lesion.

Free pulmonary regurgitation is well tolerated for decades, particularly with restrictive physiology. After a compensatory period, however, exercise tolerance becomes limited, and the risks of arrhythmia and sudden cardiac death increase. Modern imaging can be used to quantify both pulmonary regurgitation and right ventricular function, and hence influence timing of any further interventions.

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Conflict of interests

There are no competing interests to declare.

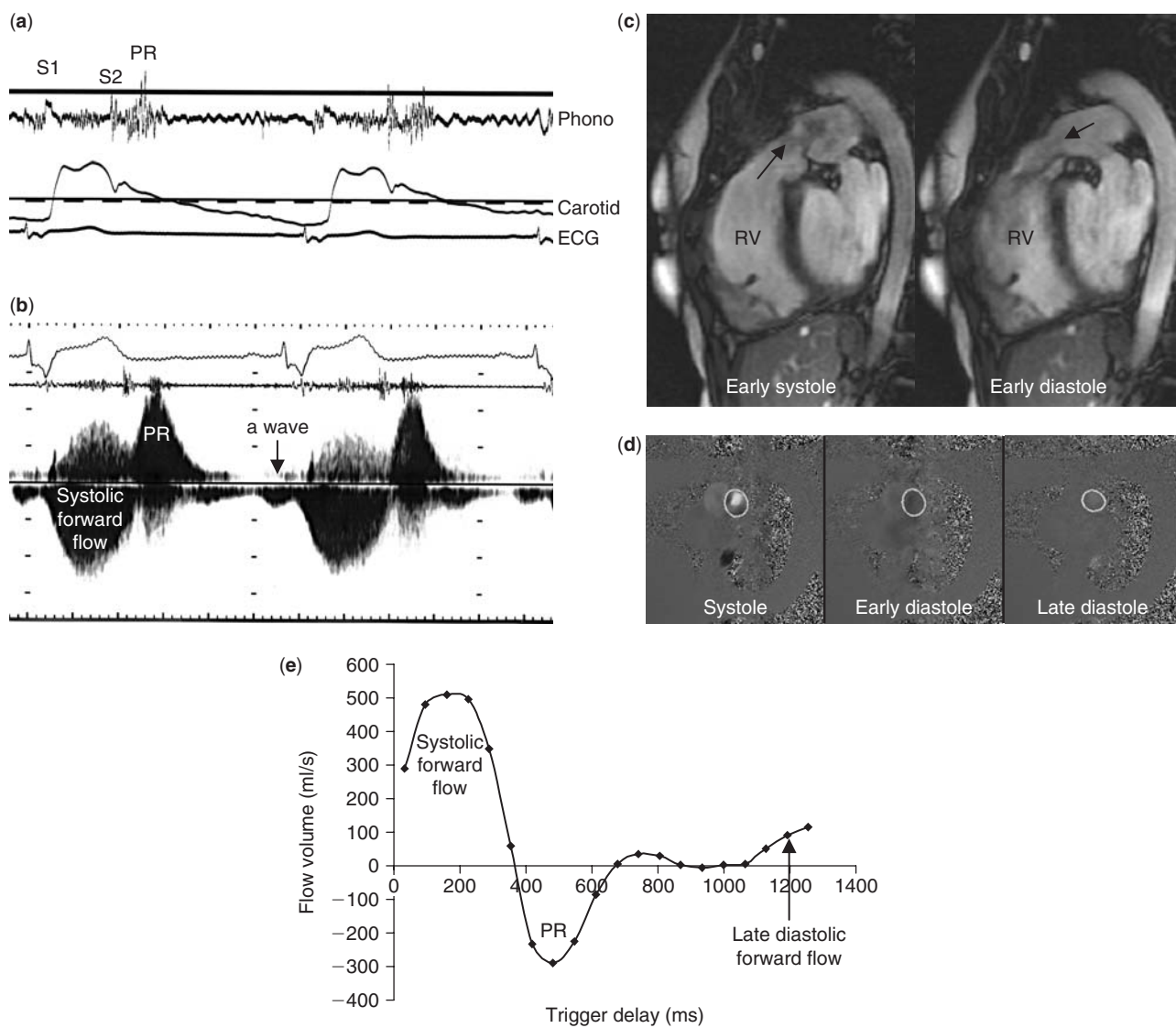


Figure 1.