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Cardiovascular magnetic resonance abnormalities of high altitude heart disease in infancy

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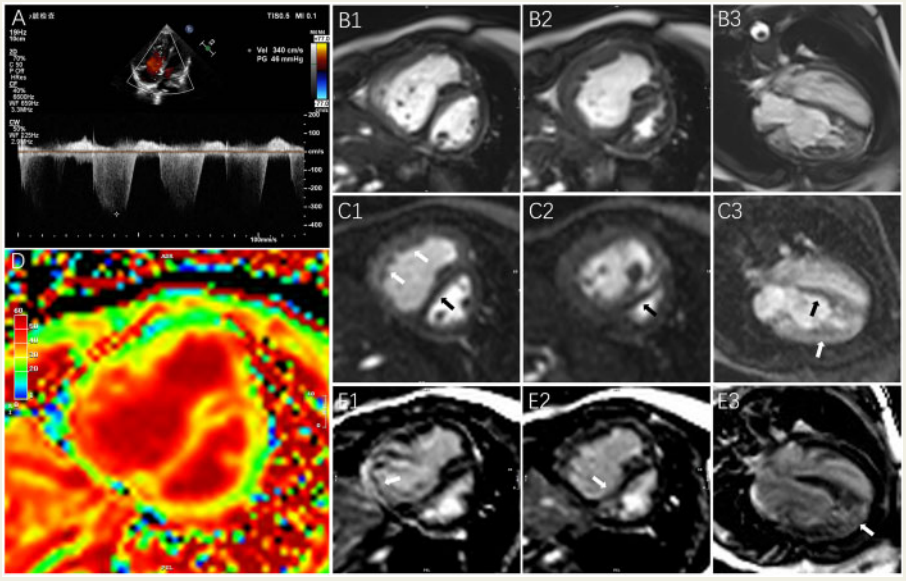

A 6-month-old infant presented with irritability, cyanosis, and dyspnoea when travelled from his residence (altitude of 2800 m) to a higher altitude area (altitude of 4000 m). Oxygen pressure was 28 mmHg (normal 80–100 mmHg) at local hospital (altitude of 2600 m). The electrocardiogram showed right-side electrical axis and right ventricular (RV) hypertrophy. Echo cardiography demonstrated RV enlargement and increased systolic pulmonary artery pressure (51 mmHg, normal 18–25 mmHg) (*Panel A*). Subsequently, the patient was referred to our hospital (altitude of 500 m). With the altitude dropped, his hypoxia symptoms and oxygen pressure (93 mmHg) were improved. The patient was diagnosed as high altitude heart disease (HAHD) according to typical history of high altitude, symptoms, examination, and combined with guideline. To demonstrate tissue characteristics of myocardium, cardiovascular magnetic resonance (CMR) was performed under anaesthesia (Supplementary data online, *Appendix S1*). Cine imaging (*Panels B1–B3*; Supplementary data online, *Videos S1 and S2*) showed RV hypertrophy, reduced RV wall motion and RV ejection fraction (29.43%), and septal movement towards to left ventricle at end-systole. The RV free wall and septum presented with regional perfusion defection (*Panels C1–C3*, arrow) and late gadolinium enhancement (*Panels E1–E3*, arrow). T1-mapping extracellular volume of left ventricular was significantly elevated to 35% (*Panel D*). HAHD is usually characterized as pulmonary hypertension and RV hypertrophy due to chronic hypoxia. The 6-month-old infant was the youngest patient with HAHD that has been reported so far. In this case, the comprehensive evaluation with CMR including myocardial fibrosis and microcirculation disturbance is of great help for guiding clinical managements.

Supplementary data are available at *European Heart Journal - Cardiovascular Imaging* online.