Cardiopulmonary complications of end-stage renal disease and severe refractory hyperparathyroidism

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A 46-year-old man was referred for management of dyspnoea thought due to severe calcific stenosis of his tricuspid aortic valve: mean gradient 49 mmHg; valve area 1.1 cm² (Panels A and B; Supplementary material online, Video S1). He had a history of end-stage renal disease maintained on haemodialysis following transplant failure 8 years prior. His renal disease was complicated by severe refractory hyperparathyroidism (levels >5000 pg/mL despite removal of all localizable parathyroid tissue) which presumably caused and accelerated his aortic stenosis (Supplementary material online, Video S2: aortic valve 12 years before: note the thin, pliable leaflets). He also had severe renal osteodystrophy characterized by osteitis fibrosa cystica of the thoracic spine and rapid development of severe kyphoscoliosis (Panel C: current chest radiograph; Panel D: chest 10 years prior), causing abnormal acute angulation of the thoracic aorta (Panel E); severe restrictive lung disease, with an obstructive component: FVC 0.73 (17% predicted), FEV₁ 0.5 (15% predicted) (Panel F); severe pulmonary hypertension with pulmonary artery systolic pressure 66 mmHg; and severe physical debility, rendering him a poor candidate for surgical or transcatheter aortic valve intervention. He developed progressive respiratory failure and refractory hypotension leading to his demise.

Hyperparathyroidism in renal disease is associated with excess mortality related mainly to cardiovascular complications including left ventricular hypertrophy, diastolic dysfunction, myocardial calcification with arrhythmias, valvular calcification, accelerated atherosclerosis, vascular calcification, and increased vascular stiffness. The severe pulmonary complications in this case were related to unusually rare, severe thoracic skeletal deformities secondary to refractory hyperparathyroidism.

Supplementary material is available at European Heart Journal online.

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