Crista terminalis bridge: a rare variant mimicking right atrial mass

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Prominent crista terminalis is a variant of normal heart anatomy mimicking right atrial mass-like tumour, thrombus, or vegetation. The case report depicts a rare kind of this structure that constitutes a thick muscular bridge in the right atrium. Detection by 2D and 3D echocardiography can avoid further useless investigation.

KEYWORDS
Crista terminalis; Cardiac mass; Atrial fibrillation; Echocardiography

Introduction
Crista terminalis (CT) is located at the junction between the trabeculated right atrial appendage and the right atrium’s smooth surface. CT originates medially from interatrial septum, just anteriorly to the orifice of the superior vena cava (SVC), descends posteriorly and laterally, turns anteriorly, and finally reaches the orifice of the inferior vena cava (IVC).

Case report
A 71-year hypertensive female is admitted to hospital for electrical cardioversion of atrial fibrillation (AF). Low molecular weight heparin anticoagulation therapy was started 3 weeks before. There is no symptom or sign of heart failure and no history of fever or tumour. Transthoracic echocardiography depicts an apparently free mass in the right atrium (Figure 1A and B; see Supplementary material, Video S1) mimicking a thrombus or a tumour.4,5 Although AF reverted spontaneously in sinus rhythm, we perform 2D transoesophageal echocardiography (TEE) (ACUSON Sequoia C256—Siemens Medical Solutions USA) all the same, so as to identify the kind of the right atrial (RA) mass and to know left atrium anatomy and function. Left atrium is dilated with no evidence of thrombus. An RA muscular trabecula 4.1 cm long and 1 cm thick joins the anterior wall of SVC and the anterior region of IVC (Figure 2A and B; see Supplementary material, Video S2). 3D TEE animation (fourSight TEE—TOMTEC) performed offline (see Supplementary material, Video S3–5) clearly shows a muscular bridge separating the venous sinus zone posteriorly (SVC and IVC) from the primitive atrium (right atrial appendage) (Figure 3).

Knowledge of this kind of normal findings in RA (embryological remnant-like prominent CT, Eustachian ridge, Chiari network) eases the right diagnosis and avoids expensive useless investigations (such as Nuclear Magnetic Resonance or X-ray Computed Tomography). Some scientific papers point out connection between prominent CT and arrhythmias.6–8 AF in this case report is probably due to hypertensive cardiopathy and age, but we can not exclude the presence of an arrhythmogenic substrate in RA.

Discussion
We consider this report notable for the following reasons: (i) it concerns a rare anatomical finding; (ii) discovering of such an abnormality is fortuitous; (iii) unusual anatomy can produce arrhythmias; and (iv) 2D and 3D TEE are sufficient to define the structure and function of the CT muscular bridge.

Conclusion
Our report of rare CT muscular bridge gives new information for the understanding of another aspect of complex and strange RA anatomy.

Supplementary material
Supplementary material is available at European Journal of Echocardiography online.

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