



Massive tricuspid valve regurgitation: sonographic findings of jugular and hepatic veins

Panagiota Sotiriou* , Kosmas Kosmidis, Matthew Tsagourias and Dimitrios Matamis

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A 33-year-old patient suffering from endocarditis underwent partial excision of anterior and posterior leaflets of his tricuspid valve (Fig. 1a, Online Resources 1, 2). Postoperatively, he was admitted to the intensive care unit under high inotropic support. Clinically, the patient exhibited intense systolic jugular pulse, known as “Lancisi’s sign”, which was sonographically visualised as systolic pulsatile dilation of the internal jugular veins (Online Resources 3 and 4). Colour Doppler examination of the tricuspid valve revealed massive regurgitation (Fig. 1b, Online Resource 5), which caused right atrial, superior and inferior vena caval volume overload during systole. 2D echocardiogram with agitated saline

(bubble test) and pulse wave (PW) Doppler examination of the hepatic veins demonstrated systolic reverse flow, which characterises massive tricuspid valve regurgitation (Fig. 1c, d, Online Resource 6). Continuous wave (CW) Doppler interrogation of the tricuspid valve revealed low blood flow velocities (< 2 m/s), because of the small pressure gradient between right atrium and right ventricle, as most of the valve apparatus was absent (Online Resource 7). The patient soon deteriorated and underwent emergency prosthetic tricuspid valve implantation. Postoperatively, tricuspid valve regurgitation, systolic pulsatile jugular vein dilation and systolic reverse flow of the hepatic veins disappeared (Online Resources 8, 9).

*Correspondence: nayiasot@hotmail.com
ICU Department, Papageorgiou General Hospital, Nea Efkarpia,
56403 Thessaloniki, Greece

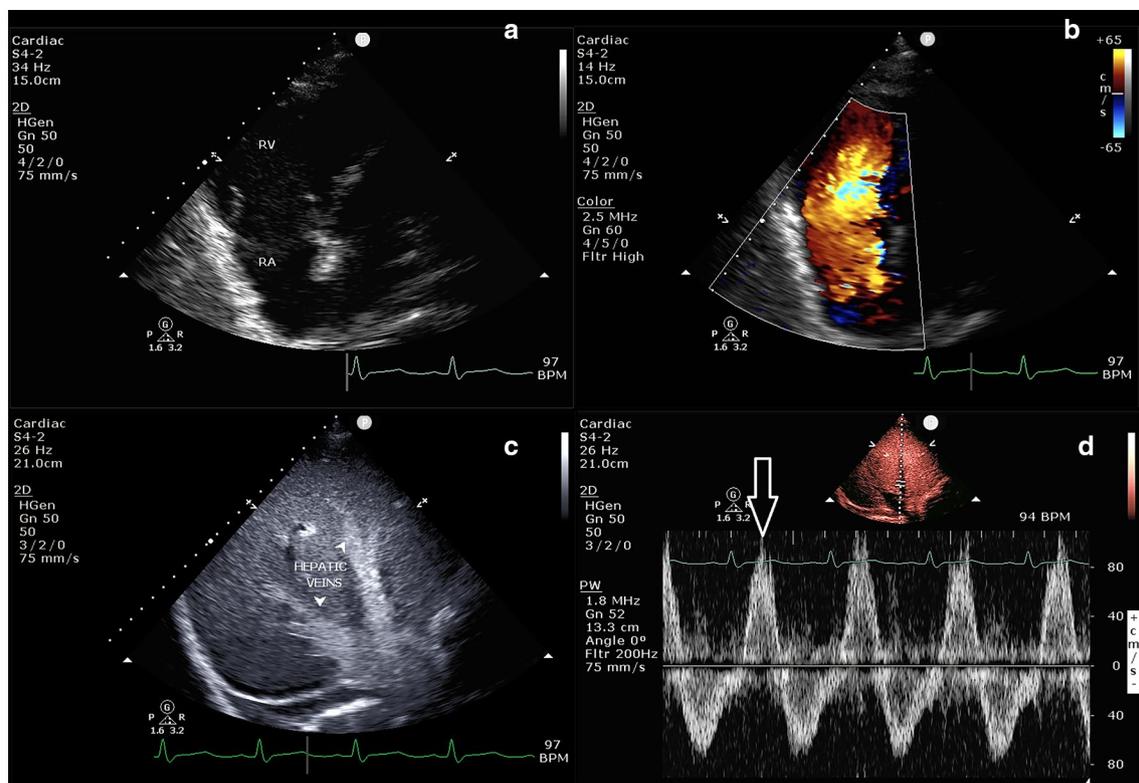


Fig. 1 **a** B-mode ultrasonography depicts the tricuspid valve of the patient after partial excision of anterior and posterior leaflets; RV right ventricle, RA right atrium. **b** Colour Doppler examination shows massive tricuspid valve regurgitation. A large volume of blood regurgitates back into the right atrium during systole (end-systolic depiction). **c** Infusion of agitated saline reveals systolic reverse blood flow in the hepatic veins due to right atrial volume overload. **d** Pulse wave (PW) Doppler examination of the hepatic veins shows systolic reverse flow (arrow)

Electronic supplementary material

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Compliance with ethical standards

Conflicts of interest

On behalf of all authors, the corresponding author states that there are no conflicts of interest.

Ethics approval

The study has been approved by the hospital's ethics committee and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

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