ANSWER TO A QUIZ ON PAGE 24: ECHOCARDIOGRAPHY

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Correct answer is C.

Irregular heart rhythm is clearly seen in the ECG recording (white asterisks). The patient had atrial fibrillation (Fig. 1a)

A prominent systolic flow waves toward the transducer were noted (arrows) (Fig. 1b). Diastolic flow waves away from the transducer were also recorded (red asterisks) (Fig. 1c).

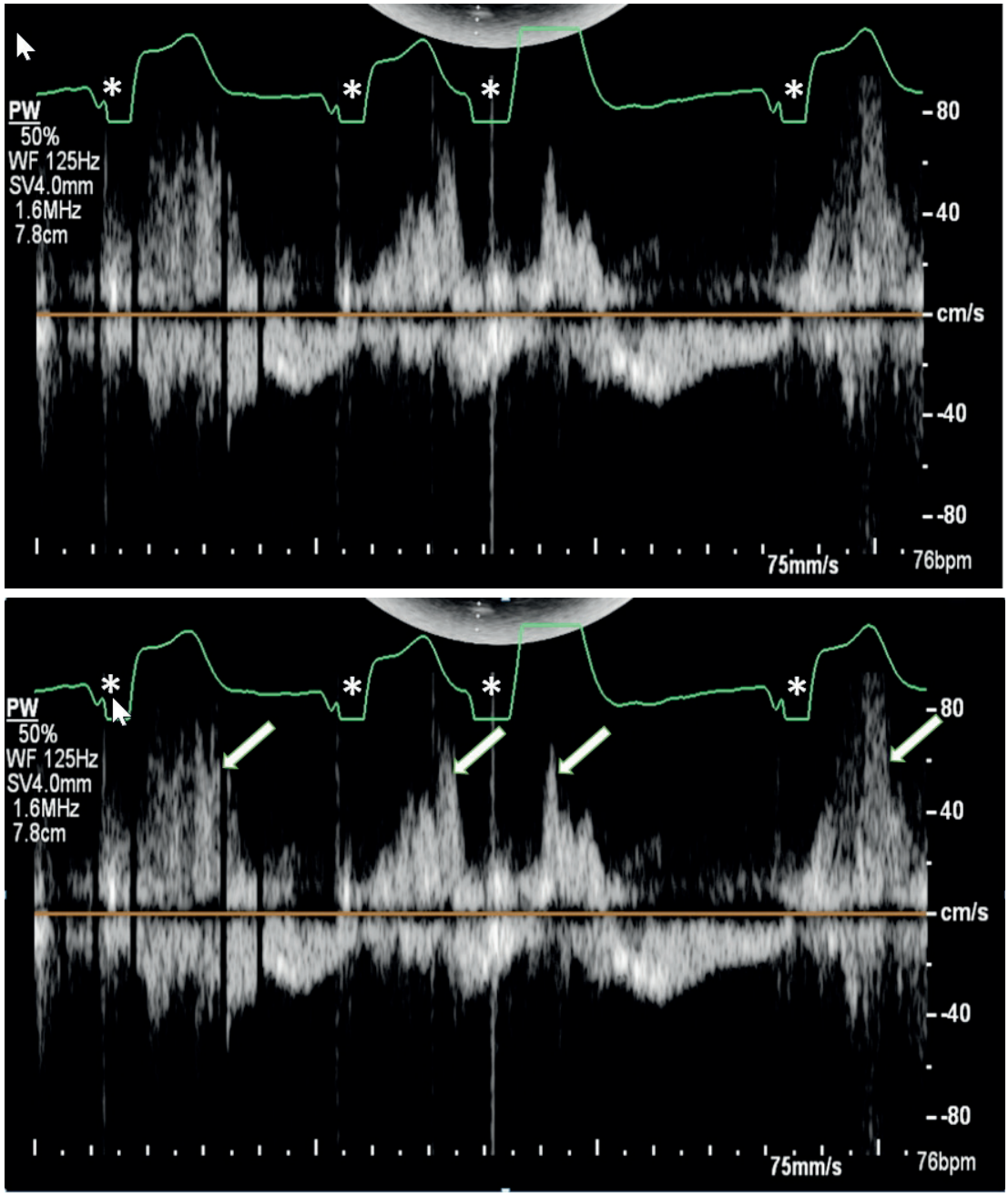

Figure 1. A. Irregular heart rhythm: atrial fibrillation; B. Systolic turbulent flow waves

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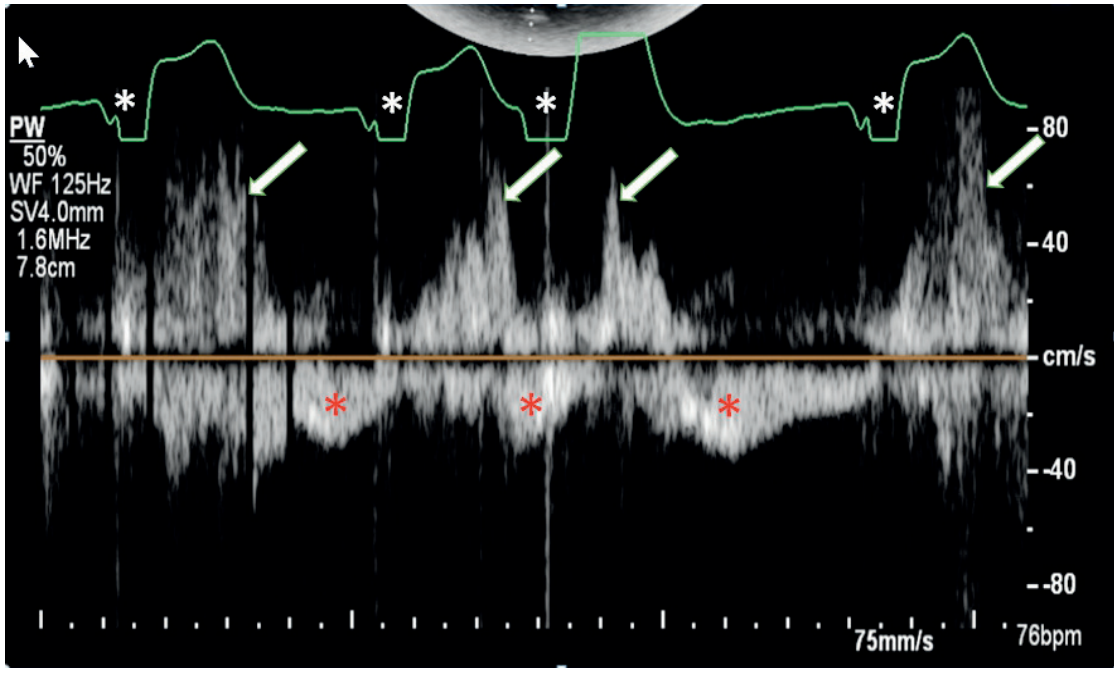

Figure 1. C. Diastolic flow waves

Hepatic vein flow has four distinct waves: forward flow waves towards right atria: systolic (S) and diastolic (D); backward flows towards the transducer: late systolic V and late diastolic A waves (Fig. 2).

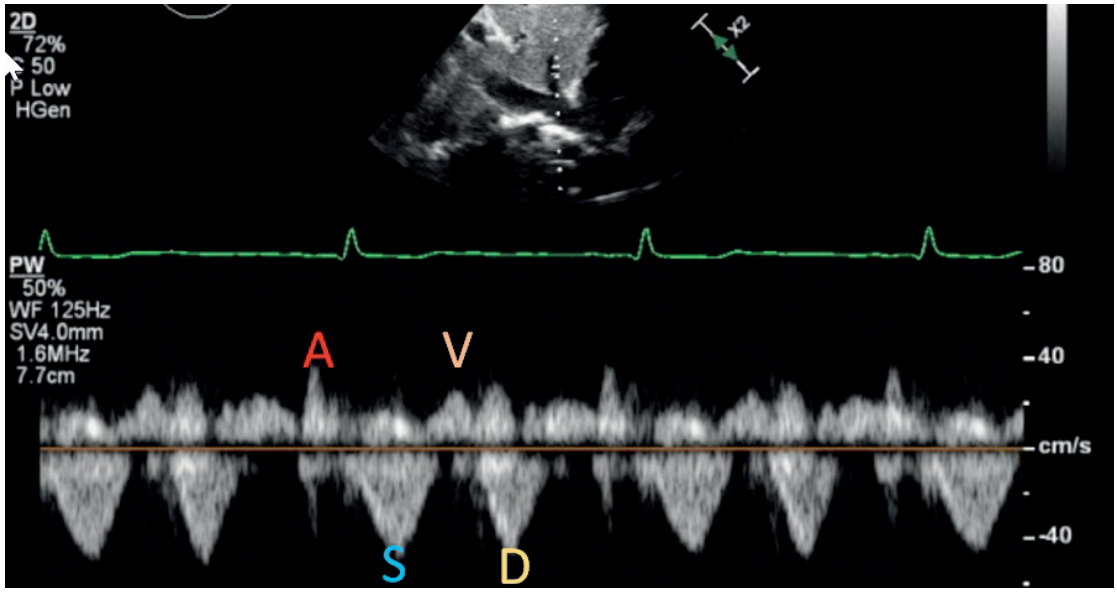

Figure 2. Normal hepatic vein flow

In atrial fibrillation the hepatic vein retrograde A wave is absent as expected. Forward S wave is blunted and D wave predominates (1). High right ventricular filing pressures lead to even more suppression or reversing of S wave (1). Severe tricuspid regurgitation is a well-known factor causing systolic hepatic vein systolic backward flow (2).

In our case, the patient had all of the above factors affecting hepatic vein flow: atrial fibrillation, high right ventricular pressures and severe tricuspid regurgitation (Movie 1. See movie at www.hvt-journal.com).

Contrary to systolic flow reversal in our case diastolic tricuspid regurgitation could be expected in complete heart block (Fig. 3) (3).

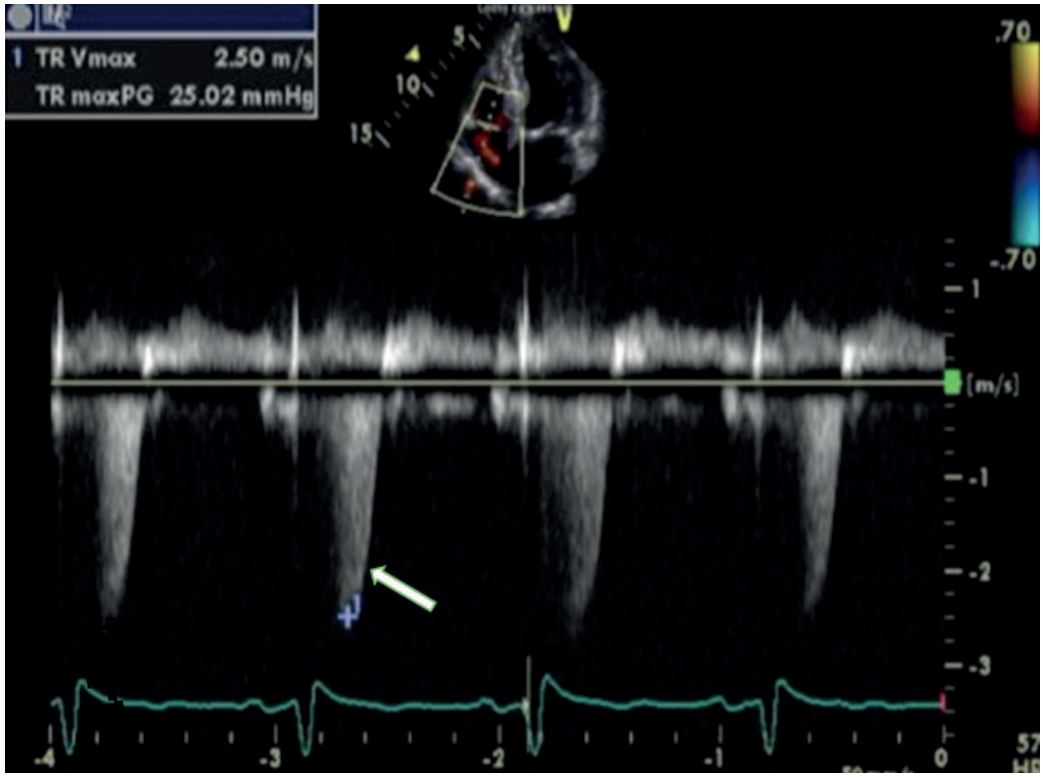

Figure 3. Diastolic tricuspid regurgitation in complete heart block (3)

Normal pulmonary vein flow contains systolic component followed by a diastolic component (D). During atrial contraction, there is slight flow reversal (Ar) (Fig. 4). In our case, diastolic flow waves were clearly seen (red asterisks). Therefore, there is no chance for those diastolic waves to be taken as Ar waves in the presence of atrial fibrillation.

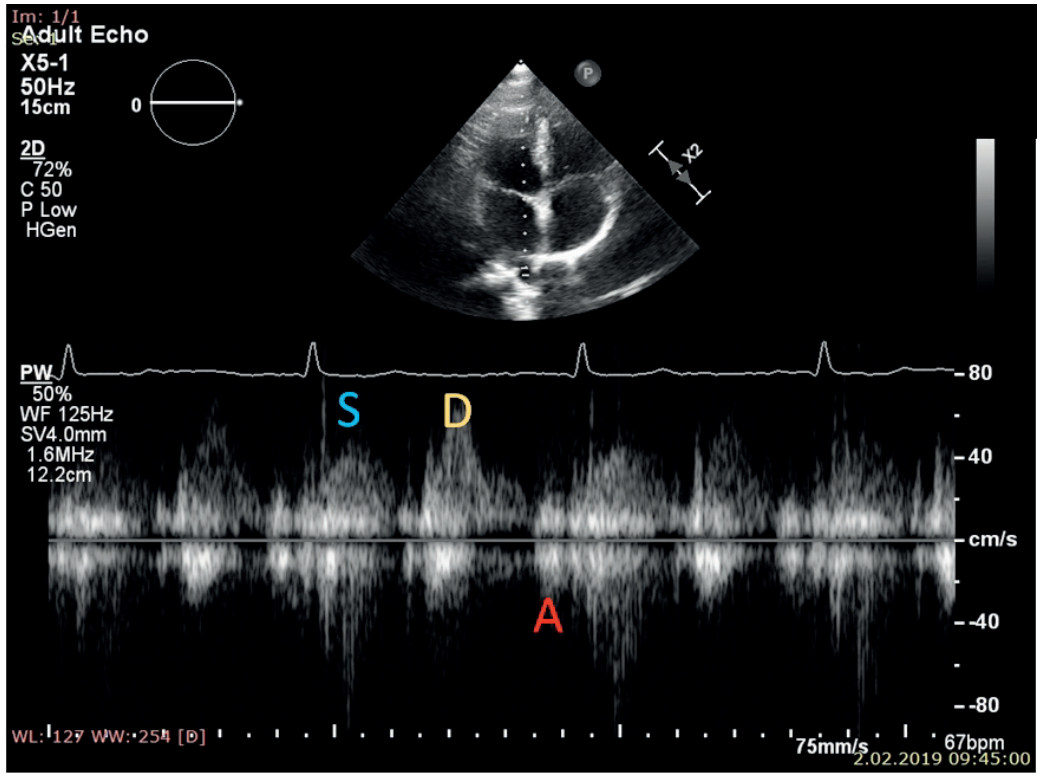

Figure 4. Normal pulmonary vein flow

Left atrial appendage has quadriphasic flow pattern: early diastolic emptying, late diastolic emptying, filling and systolic reflection waves (Fig. 5). Atrial fibrillation causes chaotic saw-tooth flow waves with varying velocities (Fig. 6).

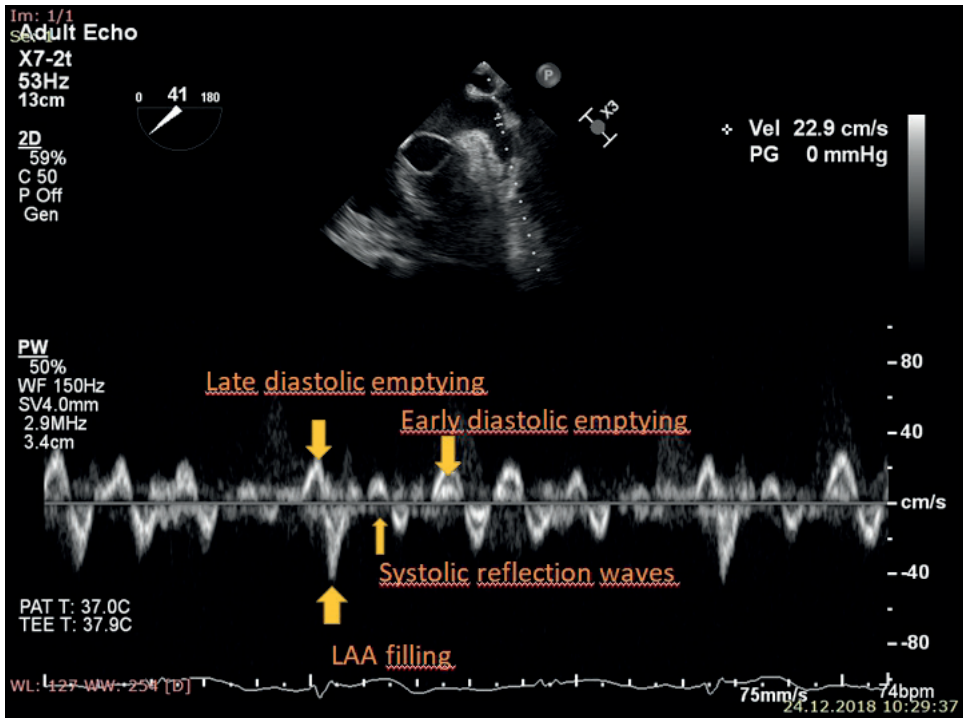

Figure 5. Normal left atrial appendage flow

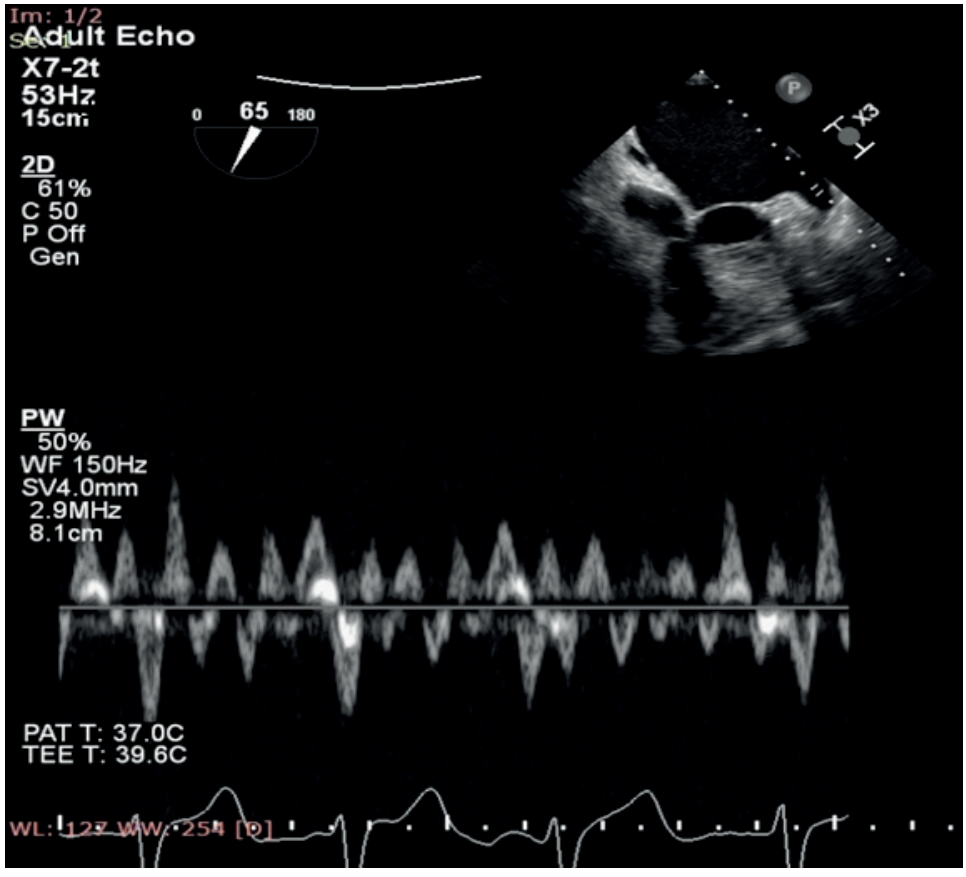

Figure 6. Left atrial appendage flow in atrial fibrillation

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References

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