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A hemodynamic challenge in assessment of echocardiographic mitral regurgitation severity

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Mitral regurgitation severity is, in accordance to current recommendations, typically evaluated by echocardiography. Several hemodynamic factors may influence this evaluation, especially systemic arterial blood pressure at the time of echocardiographic evaluation.

A 71-year-old woman was admitted in our Cardiology ward with acute decompensated heart failure. She had been previously admitted about 3 months earlier by acute decompensated heart failure, and at that time, admission transthoracic echocardiography (TTE) demonstrated mitral regurgitation, which was evaluated as severe. Systolic systemic arterial blood pressure at the time of that TTE was registered as 135mmHg. For further evaluation of mitral regurgitation mechanism, the patient underwent transoesophageal echocardiography (TEE), and in that exam mitral regurgitation was assessed as only moderate. For that exam, patient was sedated with 5mg of intravenous Midazolam, a drug with known secondary hypotensive effect. Although systemic arterial blood pressure was not described in the TEE report, retrospective analysis of nursery blood pressure records showed that patient was hypotensive during exam with systolic arterial blood pressure of 80-90mmHg. Patients was discharged, and in actual admission, concern was raised that mitral regurgitation could have been underestimated in previous TEE due to reduced afterload caused by the hypotensive effect of sedation. It was then decided to repeat TEE, and, in order to counterpose the hypotensive effect of Midazolam, TEE was performed under intravenous continuous infusion of Phenylephrine, a selective a-1 receptor antagonist with a significant vasopressor effect and minimal effect on cardiac contractility. Systolic systemic arterial blood pressure during this exam was recorded as 135-140mmHg. In this exam mitral regurgitation was confirmed as severe and patient was patient was oriented for mitral valve surgery.

Discussion

This case illustrates the importance of assessment of hemodynamic status of the patient during echocardiographic evaluation of mitral regurgitation severity, and presents a pharmacological strategy to compensate hypotensive effects of sedative agents used during TEE.