

## An Unusual Cause of Postpartum Heart Failure

### Abstract

Peripartum cardiomyopathy is a weakness of the heart muscle. It is an idiopathic cardiomyopathy that presents with heart failure secondary to left ventricular systolic dysfunction toward the end of pregnancy or in the months after delivery, in the absence of any other cause of heart failure. It is a rare condition that can carry mild or severe symptoms.

**Keywords:** *Atrioventricular block, diastolic mitral regurgitation, epidural anesthesia*

We report a case of a 35-year-old female who presented for induction of labor at 37 weeks of pregnancy secondary to cholestasis of pregnancy. She received epidural analgesia with bupivacaine and was induced with oxytocin. Immediately, postdelivery she was doing well. However, 1 h later, she developed shortness of breath and was found to have pulmonary edema. The patient was given intravenous furosemide and her symptoms improved. Chest X-ray showed pulmonary vascular congestion. A 12 leads electrocardiogram showed Mobitz Type II heart block and did not demonstrate any ischemic changes [Figure 1a]. Troponins were negative, and brain natriuretic peptide was elevated at 353 pg/mL. Computed tomography angiogram of the chest was done and showed bilateral infiltrates that were consistent with pulmonary congestion with no evidence of pulmonary embolism. Transthoracic two-dimensional echocardiogram demonstrated normal ejection fraction with no wall motion abnormalities, and normal diastolic function. Closer examination revealed retrograde flow into the left atrium after the blocked P-wave, which indicates diastolic mitral regurgitation (MR). The regurgitation jet can only be seen during episodes of heart block and was consistent with patient's symptoms [Figure 1b-d and Supplementary Movies 1-3]. The heart block was attributed to epidural analgesia with bupivacaine, and the

heart failure was attributed to increased volume status during pregnancy along with the severe diastolic MR, in light of the normal systolic and diastolic function. The patient did well with diuresis and conservative management with complete resolution of her heart block and diastolic MR.

Diastolic MR is caused by an elevated left ventricular end-diastolic pressure, leading to an inverse pressure gradient across the mitral valve in diastole and hence to a diastolic MR. This condition is frequently seen with atrioventricular (AV) conduction abnormalities of any degree, hypertrophic cardiomyopathy, advanced left ventricular systolic dysfunction, during atrial flutter, and severe aortic regurgitation.<sup>[1-3]</sup>

In patients with AV block, ventricular systole may not occur at the end of atrial systole. The increase in left ventricular diastolic pressure following atrial systole may result in transmitral pressure gradient inversion during atrial relaxation, and mid or late diastolic MR may develop.<sup>[3,4]</sup>

The cardiovascular changes associated with normal pregnancy include increased blood volume which can cause volume overload in postpartum females and symptoms of heart failure. In addition, epidural anesthesia use during delivery can induce heart block.<sup>[5]</sup> In our patient in light of the normal systolic and diastolic function, her symptoms were attributed to diastolic

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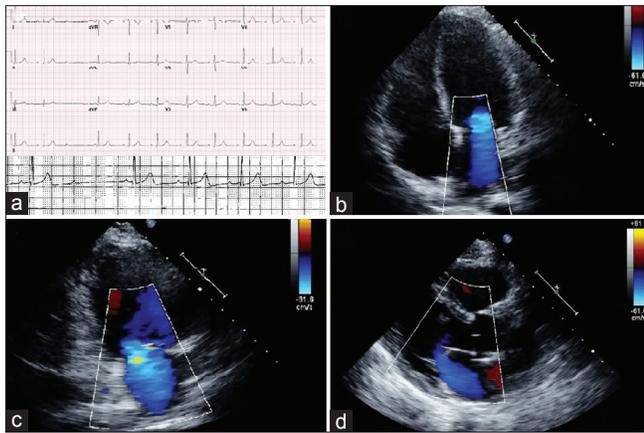


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**Figure 1:** (a) 12 lead electrocardiogram and telemetry strip showing Mobitz II second-degree atrioventricular block. (b and c) Transthoracic echocardiogram apical four chambers view (b) and two chamber view (c) showing color flow Doppler of diastolic mitral regurgitation. (d) Transthoracic echocardiogram parasternal long axis view showing color flow Doppler of diastolic mitral regurgitation

MR secondary to heart block from epidural anesthesia in addition to increased blood volume due to pregnancy.

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### Conflicts of interest

There are no conflicts of interest.

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