Valvular Heart Disease: Regurgitant Lesions

172

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Aortic Regurgitation

Definition

1. Aortic regurgitation is a flow from the aorta into the left ventricle during diastole leading to both volume and pressure overload.
2. Severity is characterized by regurgitant jet size and left ventricular dilatation measured with echocardiography.

Symptoms

Aortic regurgitation can cause dyspnea, angina, and/or palpitations related to tachycardia or arrhythmia.

Incidence

1. Chronic aortic regurgitation may be secondary to congenital bicuspid valve, dilated aortic root, rheumatic disease, or other causes such as Marfan syndrome and Ehlers-Danlos syndrome.
2. Acute aortic regurgitation may be secondary to endocarditis or aortic dissection.

Interaction with Pregnancy

1. Chronic aortic regurgitation is generally well tolerated in pregnancy because decreased systemic vascular resistance, together with increased heart rate which shortens diastolic time, decreases regurgitation [1].
2. Acute aortic regurgitation is more likely to cause cardiac complications and require urgent surgical intervention during pregnancy.

Management

1. Neuraxial techniques including epidural or low-dose combined spinal epidural or general anesthesia may be used for patients with aortic regurgitation.
   (a) Slow, small titrations are appropriate especially in patients with aortic regurgitation and left ventricular systolic or diastolic dysfunction.
2. Early analgesia may avoid increases in systemic vascular resistance and regurgitation secondary to labor pain.
3. A normal to high heart rate minimizes regurgitation time.
4. High systemic vascular resistance may increase regurgitation and should be avoided unless regurgitation is accompanied by aortic stenosis.
5. Intra-aortic balloon pump is contraindicated in patients with aortic regurgitation.
6. Postpartum diuresis and afterload reduction may help avoid volume overload.

Mitral Regurgitation

Definition

1. Mitral regurgitation is a flow from the left ventricle into the left atrium during systole.

Please see Chapter 31: Introduction to Valvular Heart Disease for additional information

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2. Severity is characterized by regurgitant jet size, systolic reversal of flow in the pulmonary veins, and leaflet appearance on echocardiography.

Symptoms

1. Mitral regurgitation may cause dyspnea, tachycardia, and/or palpitations.

Incidence

1. Mitral valve insufficiency is present in up to 28% of pregnancies [2].

Interaction with Pregnancy

1. Mild to moderate mitral regurgitation is generally well tolerated during pregnancy.

Management

1. Valve repair or replacement before pregnancy is appropriate for symptomatic women with severe mitral regurgitation.
2. Valve repair before pregnancy may be considered in asymptomatic patients with severe mitral regurgitation after discussion about the risks and benefits of the operation and its outcome on future pregnancies [3].
3. Neuraxial analgesia/anesthesia and general anesthesia can be used in patients with mitral regurgitation.
4. A normal to high heart rate minimizes regurgitation time.
5. Preload-dependent lesions, including mitral regurgitation, may be sensitive to preload decreases from neuraxial analgesia/anesthesia. As they are also sensitive to preload increases, volume overload should be avoided.
6. High systemic vascular resistance may increase regurgitation and should be avoided unless regurgitation is accompanied by aortic stenosis.
7. Postpartum diuresis and afterload reduction may help avoid volume overload.

Pulmonic or Tricuspid Regurgitation

Definition

1. Pulmonic and tricuspid regurgitation severities are characterized by regurgitant jet size and size of the right ventricle, right atrium, IVC, and hepatic vein on echocardiography.

Symptoms

1. Patients with severe disease may be at increased risk for complications including right heart failure and arrhythmias.
2. Preexisting right ventricular dilatation or dysfunction increases the risk for complications and surgical intervention [4].

Incidence

1. Pulmonic or tricuspid valve insufficiency is present in up to 94% of pregnancies [2].
2. Asymptomatic pulmonic or tricuspid regurgitation can be caused by the normal physiologic changes of pregnancy.
3. Severe disease can be associated with endocarditis or congenital heart disease.

Interaction with Pregnancy

1. Pulmonic or tricuspid regurgitation in the absence of other diseases is usually well tolerated in pregnancy.

Management

1. Neuraxial analgesia/anesthesia and general anesthesia can be used in patients with pulmonic or tricuspid regurgitation.
2. Patients may require treatment with antiarrhythmic and/or diuretic medication to prevent right heart failure.

References

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