

Quick Fact Sheet: Aortic Regurgitation

Aortic regurgitation (aka aortic insufficiency) is defined as the backflow of blood from the aorta to the left ventricle during diastole.

Etiologies

- 1) Aortic cusp/leaflet abnormalities (Heard at LSB)
 - Infectious: Bacterial endocarditis, Rheumatic Heart Disease
 - Congenital: Bicuspid aortic valve, Marfan's syndrome
 - Inflammatory: SLE, RA, Behcet's syndrome
 - Degenerative: Myxomatous (floppy) valve, "Senile degeneration" due to calcification
 - Other: Trauma, post valvuloplasty, diet drug valvulopathy

- 2) Aortic root abnormalities (Heard at RUSB)
 - Aortic root dilation: Marfan's syndrome, syphilis, ankylosing spondylitis, relapsing polychondritis, idiopathic aortitis, annuloaortic ectasia, Ehlers-Danlos syndrome
 - Loss of commissural support: aortic dissection, trauma, chronic VSD

Signs/Symptoms

- 1) Acute AR - Signs of heart failure, acute SOB secondary to pulmonary edema, and angina
- 2) Chronic AR
 - Patients may remain asymptomatic for many years before symptoms occur
 - Signs of left heart failure (fatigue and dyspnea), palpitations, and angina

Physical Examination

- 1) Auscultation of the heart
 - Soft, high-pitched diastolic decrescendo murmur best heard at the left 3rd ICS at end-expiration with the patient sitting up and leaning forward. Note: In the presence of aortic root disease (versus a leaflet abnormality), the murmur may be best heard at the RUSB
 - A systolic ejection murmur may be present at the RUSB due to the high flow state
 - A diastolic rumble (Austin-Flint murmur) may be heard at the apex due to the regurgitant jet striking the mitral valve
 - A S4 is often heard due to LVH, a S3 may be heard when CHF occurs
- 2) Other findings
 - Peripheral signs due to increased pulse pressure (see table below)
 - Visible cardiac pulsations are common
 - PMI may be displaced laterally and caudally
 - Pulsus bisferens may be present

Diagnosis

- 1) EKG - non-specific (no EKG findings are sensitive for AR), although LVH commonly present
- 2) Chest x-ray - non-specific (no finding are sensitive for AR)
- 3) Echocardiography - Can measure the pressure half-time and the regurgitant fraction, both of which help to determine the severity of AR present
- 4) Cardiac catheterization
 - Can also measure pressure half-time and regurgitant fraction
 - Performed before valve replacement to assess for coronary artery disease

	Pressure half-time (ms)	Regurgitant fraction %
Mild	> 500	0-19
Moderate	500-350	20-35
Severe	349-200	36-50
Critical	<200	> 50



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Treatment

1) Acute aortic regurgitation

- Afterload reduction with nitroprusside
- Inotropic support with dobutamine if needed
- Emergent aortic valve replacement usually required

2) Chronic aortic regurgitation

- No treatment if patient is asymptomatic
- Afterload reduction with ACE inhibitor if symptomatic
- Careful monitoring with echocardiograms will help determine proper timing for valve replacement

<u>Name of Sign</u>	<u>Description</u>
Corrigan's pulse	A rapid and forceful distension of the arterial pulse with a quick collapse secondary to the increased pulse pressure
De Musset's sign	Bobbing of the head with each heart beat
Muller's sign	Visible pulsations of the uvula
Quincke's sign	Capillary pulsations seen on light compression of the nail bed
Traube's sign	Systolic & diastolic sounds heard over femoral artery ("pistol shots")
Duroziez's sign	Gradual pressure over femoral artery leads to a systolic & diastolic bruit
Hill's sign	Popliteal systolic blood pressure exceeding brachial systolic blood pressure by 60 mmHg or greater
Shelly's sign	Pulsation of the cervix
Rossenbach's sign	Hepatic pulsations
Becker's sign	Visible pulsations of the retinal arterioles
Gerhardt's sign (aka Sailer's sign)	Pulsation of the spleen in the presence of splenomegaly
Mayne's sign	A decrease in diastolic blood pressure of 15 mmHg when the arm is held above the head
Landolf's sign	Systolic contraction and diastolic dilation of the pupil