

Acute mitral regurgitation

Etiology

- Ischemic (usually inferior or lateral MI causing papillary muscle rupture)
- Endocarditis
- Less commonly in the setting of myxomatous disease or rheumatic valve

Treatment

- The goal is to decrease afterload, optimize preload and control heart rate
- Low threshold for NIV/BiPAP applicable for all scenarios
 - Maintain gas exchange function and alleviate work of breathing
 - Decreases LV afterload and preload
- Control heart rate
 - Target 80-110
 - Bradycardia increases regurgitant flow
 - Avoid BBs and Diltiazem

Warm and dry patients

- Decrease afterload
 - Nicardipine or high dose NTG (100-400 mcg/min)
 - Clevidipine ideal (less volume compared to nicardipine but too expensive)

Cold and wet patients

- Decrease afterload (NIV, Nicardipine, NTG)
- Decrease preload
 - Furosemide – early venodilation and diuresis
- Inotropes – increase contractility
 - Low dose epinephrine as first option or norepinephrine
- Inodilators– increase contractility and decrease afterload (vasodilation)
 - Dobutamine preferred over milrinone
 - Maintain HR, quicker effect, and shorter half life
- Interventional cardiology and cardiovascular surgery consults
 - Low threshold for mechanical circulatory support (MCS)
 - Impella or IABP earlier better than later
 - Revascularization for ischemic etiology
 - Consideration for MV debridement/repair or replacement for infective endocarditis

Acute aortic regurgitation

Etiology

- Type A aortic dissection
- Endocarditis

Treatment

- Similar to acute MR except more cautious control of HR but still do not target HR of 60 if the etiology is acute aortic dissection
- MCS not useful

Severe aortic stenosis with acute decompensated heart failure

Etiology

- Usually triggered by an acute condition such as sepsis, Afib, GI bleed, and others in patients with chronic AS
 - Degenerative atheromatous disease in older patients
 - Bicuspid aortic valve in younger patients

Treatment:

- Management of the triggering condition
- Maintain MAP and DBP
 - Target MAP at least 65, preferably 75 to 80 mmHg and DBP >50 mmHg
 - Use vasopressin, phenylephrine or norepinephrine.
 - Cautious IVF – 250 ml boluses with reassessment
- Optimize preload
 - Cautious IVF
 - Avoid diuretics unless clearly volume overloaded
- Rate control
 - Avoid tachycardia.
 - Low threshold for cardioversion in setting of Afib
- Avoid intubation, if needed
 - Use delayed sequential intubation
 - Ketamine 1 mg/Kg initial dose. If pt does not achieve dissociation, follow with additional aliquots of 0.5 mg/Kg aliquots until the patient is dissociated
 - Add fentanyl to prevent sympathetically mediated ketamine induced tachycardia
 - Paralyze with Rocuronium or succinylcholine
 - Intubate
 - Use concomitant vasopressors
- Increase contractility if reduced LV function
 - Norepinephrine
 - Consider digoxin as adjunctive if tachycardic (onset of effect 4-6 h, less effective in pts with increased sympathetic activity like all critically ill pts)
- Consult interventional cardiology, structural cardiology, and CV surgery
 - Early mechanical circulatory support (MCS) – Impella, IABP
 - Temporizing valvuloplasty
 - TAVI or surgical replacement