L’insuffisance mitrale

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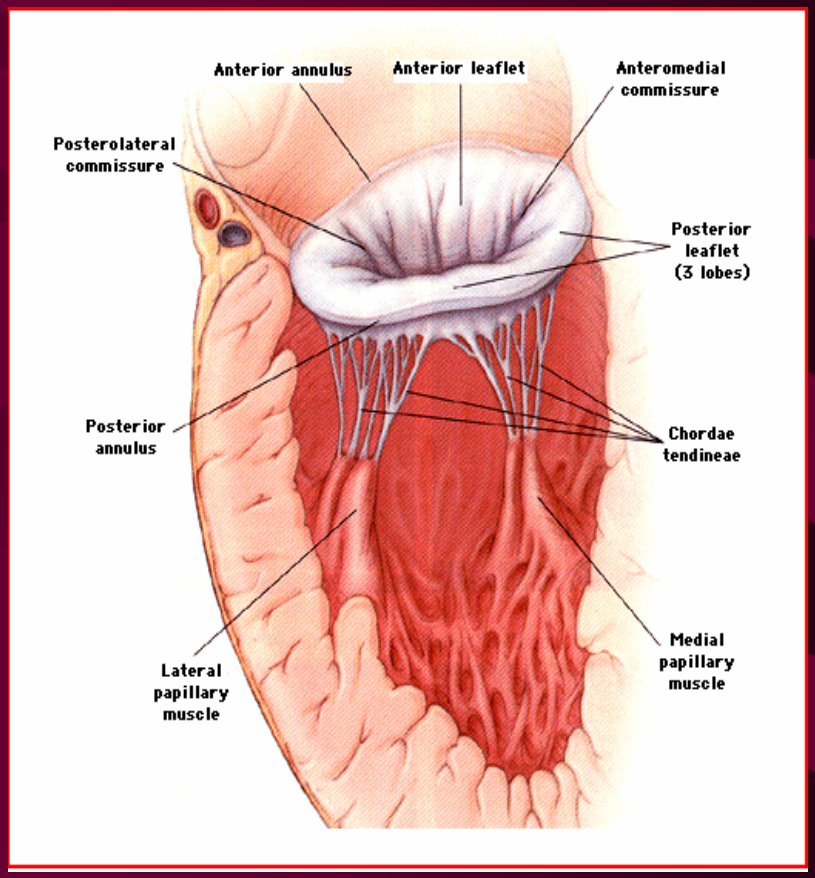
6 octobre 2004

Valve mitrale

- Dilatation de l’anneau
- Atteinte des chordes tendinea et muscles papillaires
- Atteinte des feuillets
- Prothèse valve



Étiologies

Causes of Chronic Mitral Regurgitation

Leaflet
- Rheumatic fever
- Systemic lupus erythematosus
- Infective endocarditis (acute and chronic)
- Scleroderma
- Connective tissue disorders
  - Marfan's
  - Ehlers-Danlos
  - Pseudoxanthoma elasticum
- Congenital
  - Mitral valve clefts
  - Parachute mitral valve
  - Endocardial cushion defects
- Myxomatous degeneration (mitral valve prolapse)
- Left atrial myxoma
- Hypertrophic cardiomyopathy (systolic anterior movement of mitral valve)
- Fenfluramine-phentermine

Chordae tendineae
- Myxomatous degeneration (mitral valve prolapse)
- Infective endocarditis (acute and chronic)
- Trauma
- Rheumatic fever
- Rupture
  - Spontaneous
  - Myocardial infarction
  - Trauma
  - Myxomatous degeneration
  - Endocarditis

Papillary muscles
- Papillary muscle dysfunction
  - Ischemia
    - Myocardial infarction
    - Dilated cardiomyopathy
    - Left ventricular aneurysm
  - Infiltration (amyloid, granulomas)
  - Infection (endocarditis, abscess)
- Papillary muscle rupture
  - Myocardial infarction
  - Trauma

Mitral annulus
- Calcification
  - Idiopathic
  - Rheumatic fever
  - Chronic renal failure
  - Hyperparathyroidism
- Dilatation
  - Connective tissue disorder
  - Dilated cardiomyopathy

Prosthetic valve
- Paravalvular leak
- Infective endocarditis
- Ring or strut fracture
- Disc or ball dysfunction or dislodgement
- Leaflet deterioration (tissue valves)

Pathophysiologie aiguë

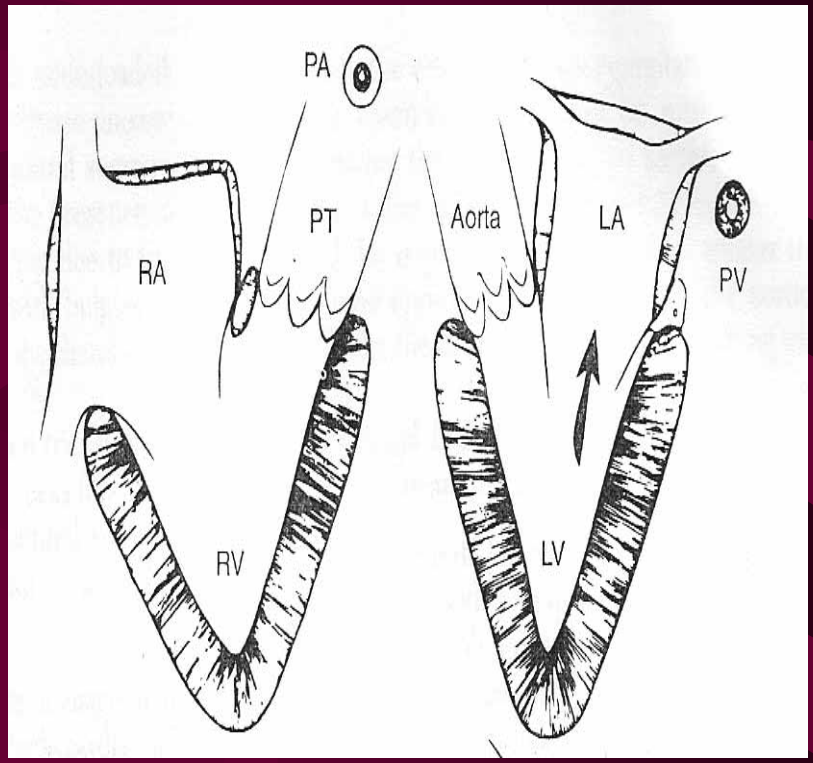
Régurgitation soudaine

↑ pression OG

HTP OAP

IC drt

↓ Débit



Pathophysiologie chronique OG

Régurgitation

⇩

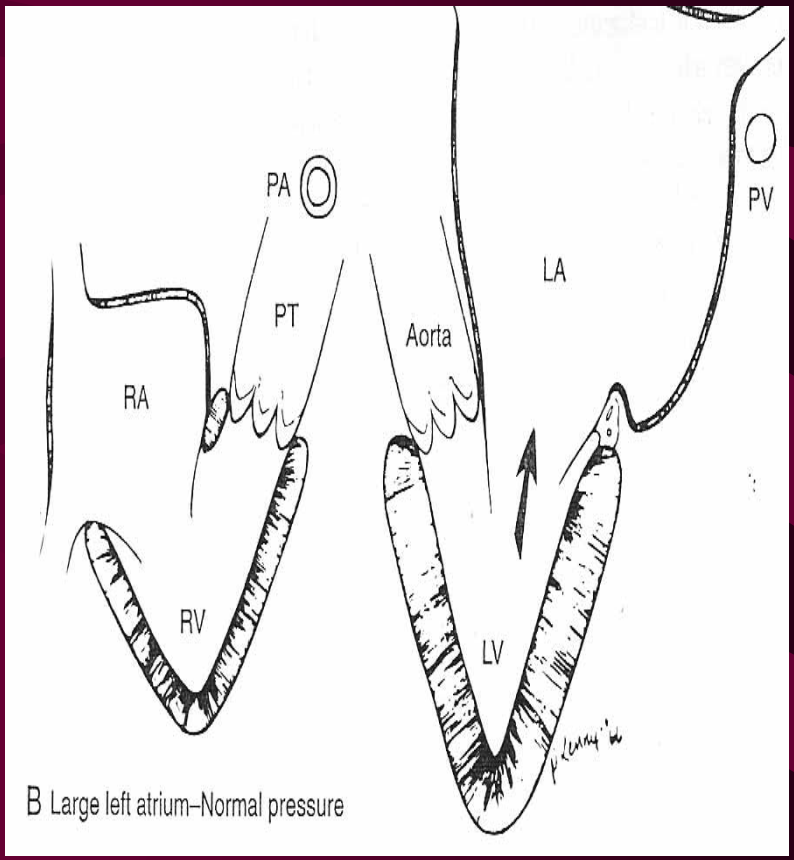
Dilatation OG ⇨ FA

⇩ Thrombus

Tension feuillet postérieur

⇩

↑ régurgitation



Pathophysiologie chronique VG

Régurgitation OG

↑précharge VG

ET ↓ tension murale

↓ post charge

Hypertrophie excentrique VG

↑ FeVG

Dilatation VG avec ↓ contractilité

↑ volume total

↑ Régurgitation et IC

Courbe pression-volume

-Hypertrophie →

↓ stress VG

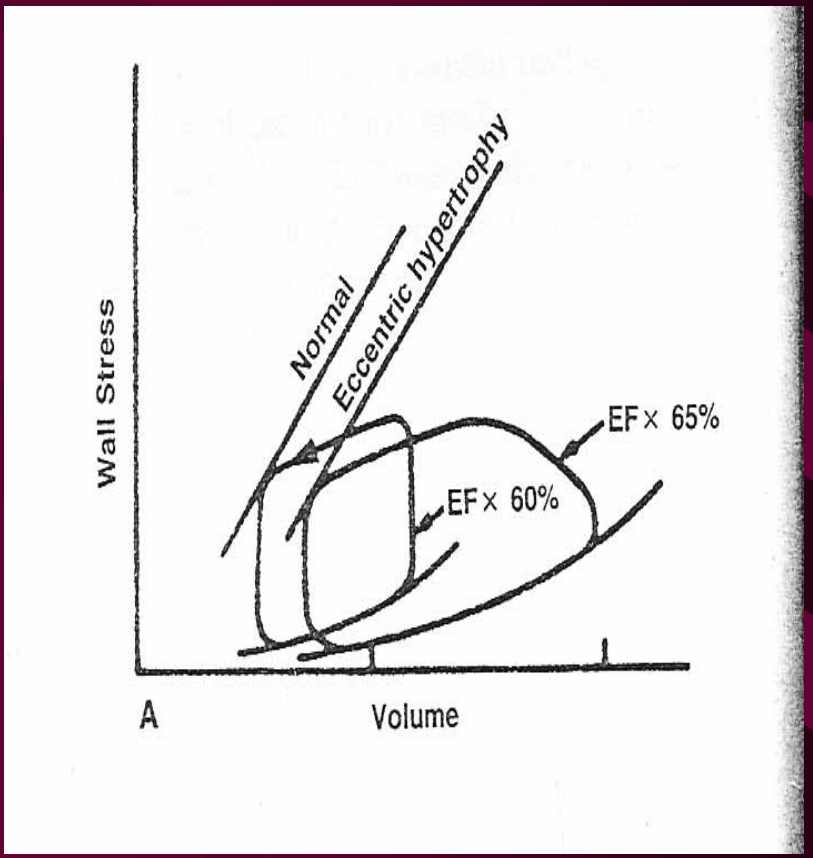
(loi de Laplace)

-Réserve en précharge →

↑ contractilité

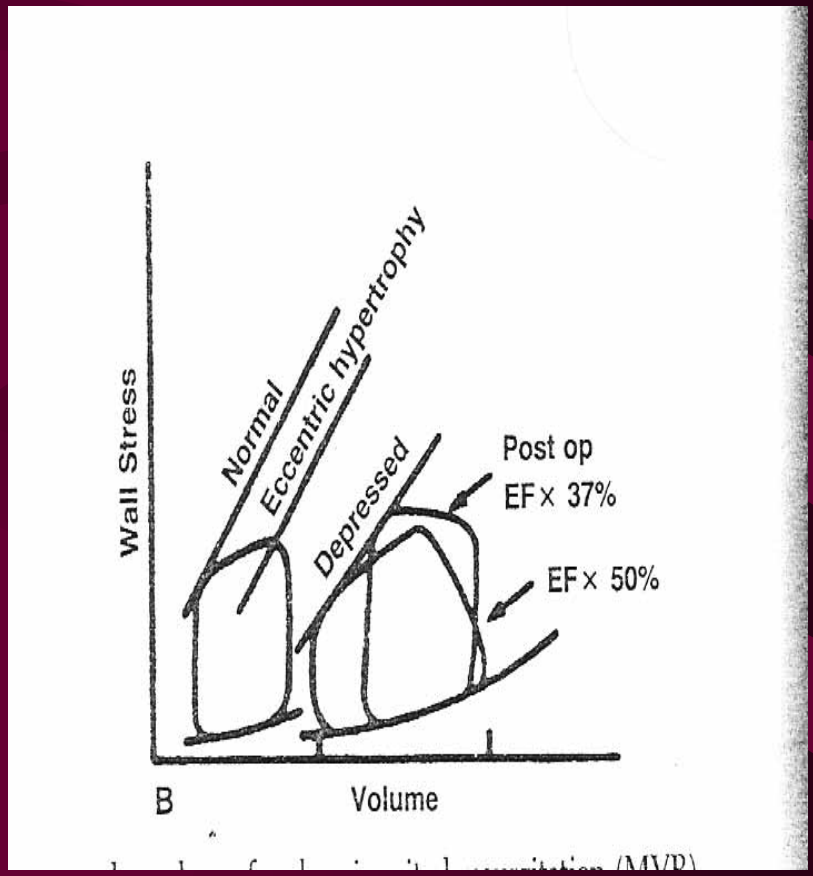
(loi de Frank Starling)

Fe VG ↑

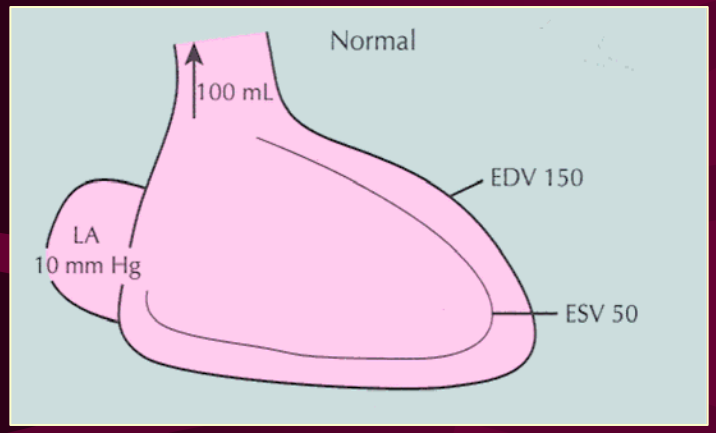


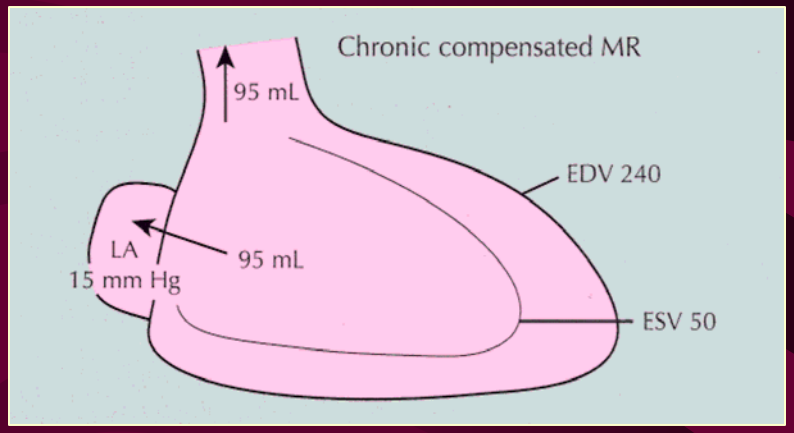
Courbe pression-volume

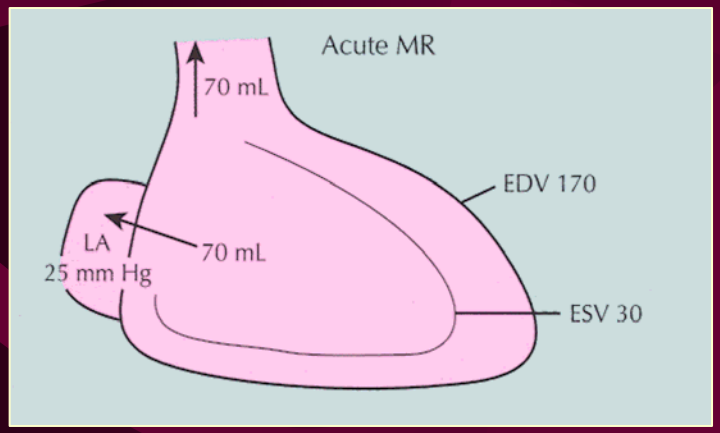
- Dépression myocardique intrinsèque avec maintien de la FeVG
- Mais la post charge doit demeurer ↓

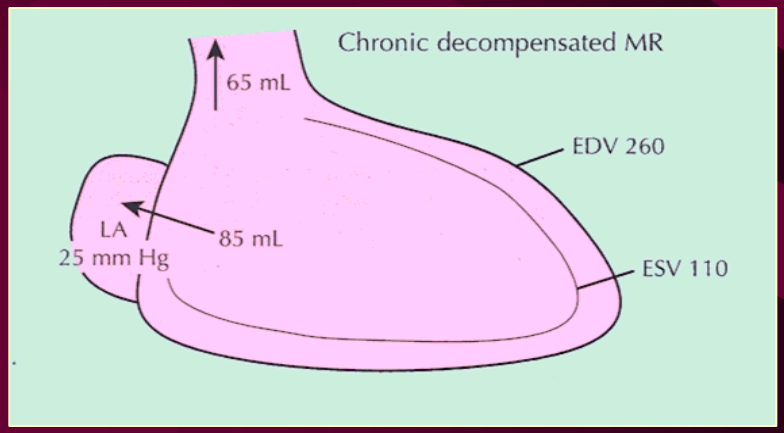


Résumé pathophysiologie









État équilibre

Régurgitation OG

- Grandeur de l'orifice mitrale
- Gradient de pression à travers la valve mitrale
  - Compliance du VG
  - Impédance VG éjection dans aorte
- Fréquence cardiaque

Mécanismes compensatoires

- Dilatation VG
- ↑ pression de remplissage
- ↓ résistance périphérique
- Fréquence cardiaque adaptée

Mécanismes compensatoires

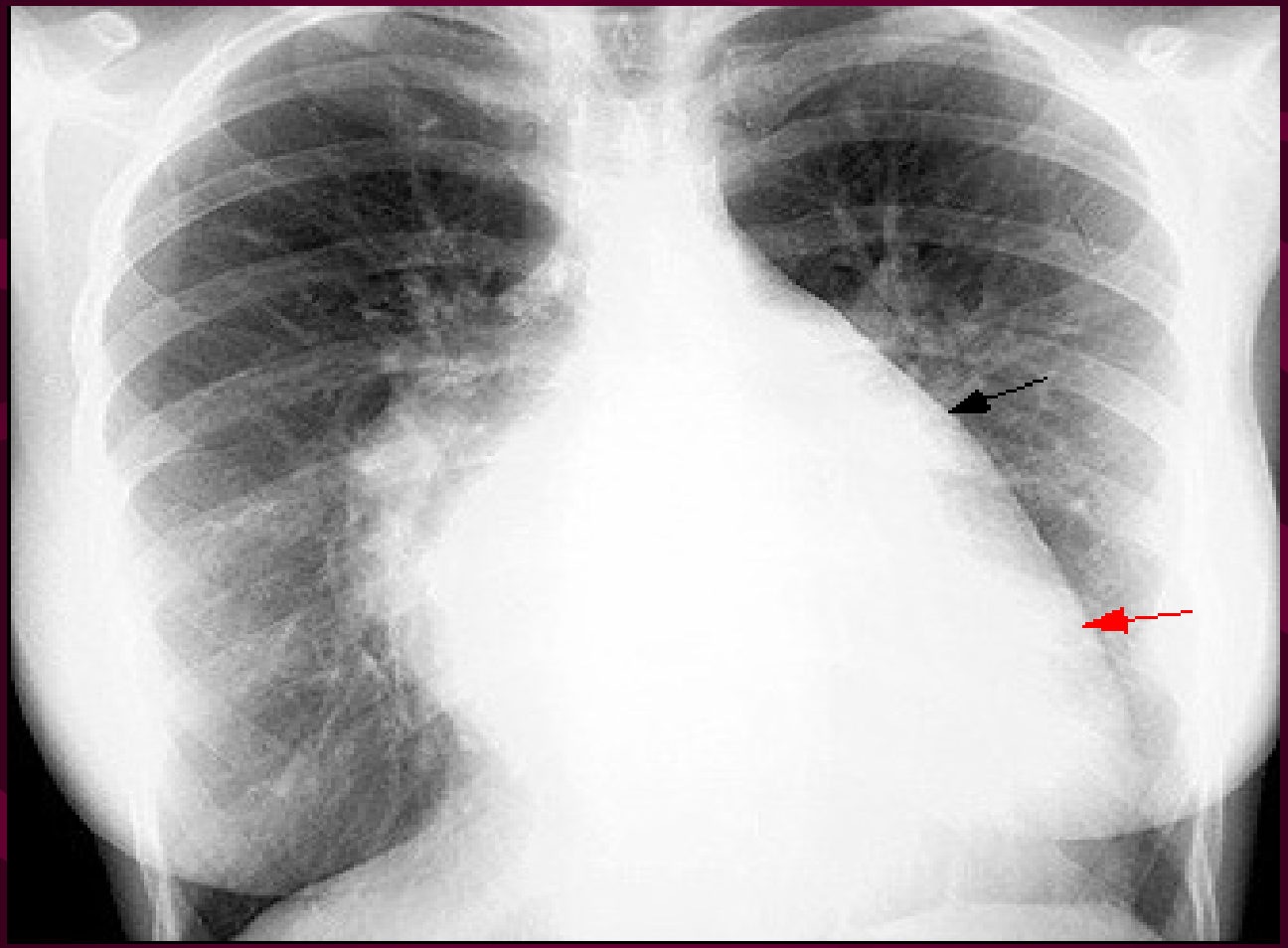
Table 8–12D. UNCOMMON CAUSES OF VALVULAR LESIONS

Disease	Features Affecting Compensatory Mechanisms: *Rate*	*LV Function and Compliance*	*Vascular Resistance*	Associated Conditions
A. Mitral regurgitation (MR)				
1. Conditions producing annular dilatation				
a. Aortic regurgitation		Usually in failure at this stage	Elevated with low output	
b. Left ventricular failure			Usually elevated	
2. Conditions affecting the chordae tendineae and papillary muscles				
a. Myocardial ischemia	Associated dysrhythmias, especially bradydysrhythmias	Often poor	Normal or elevated if cardiac output decreased	
b. Chordal rupture				
c. HOCM		Hyperkinetic with low ventricular compliance	Usually elevated	
3. Conditions affecting the valve leaflets				
a. Marfan's Ehlers-Danlos Osteogenesis imperfecta		Usually intact—these conditions also affect connective tissue of chordae tendineae		
b. Rheumatic fever				
c. Rheumatoid arthritis	Heart block	Dilated cardiomyopathy		Other associated valve abnormalities
d. Ankylosing spondylitis	AV dissociation			Aortic regurgitation
e. Amyloidosis	SA and AV nodal infiltration	Restrictive and dilated cardiomyopathy		Coronary artery disease
f. Gout	Urate deposits in conduction system	Usually normal		Coronary artery disease

Diagnostic

- Histoire; non spécifique fatigue
- E/P;
  - souffle holosystolique à apex
  - choc apexien étalé gauche
- ECG; dilatation OG
- Rx pulmonaire
- Cathétérisme; onde v
- Écho;
  - ↑ VG
  - Pattern régurgitation

Rayon X pulmonaire



Onde v

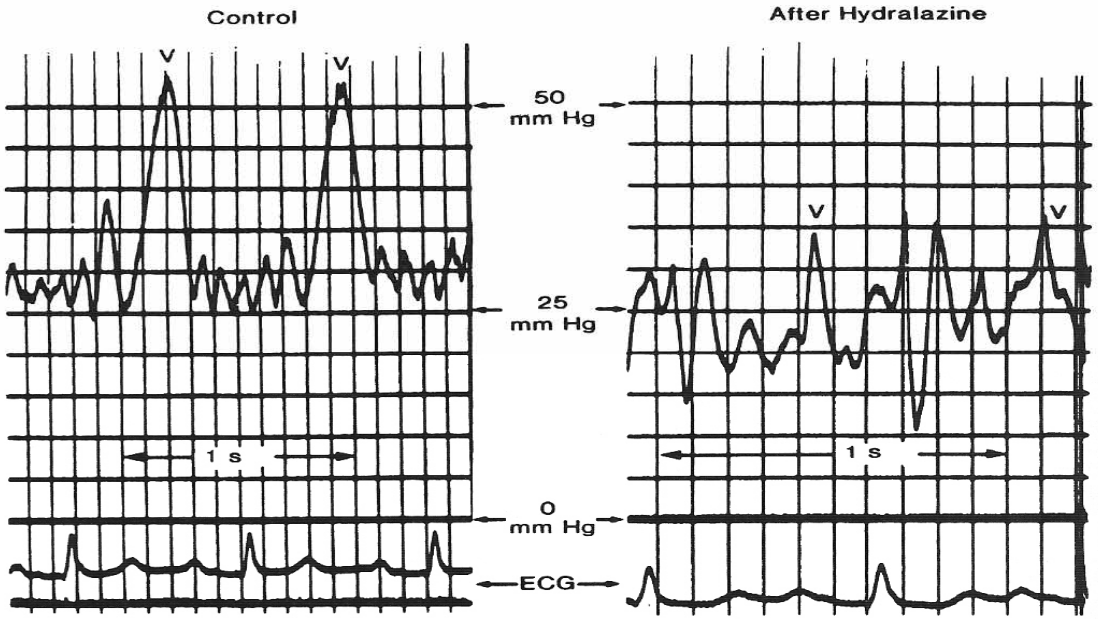


Figure 2–2 • Regurgitant blood flow into the left atrium produces a large V wave on a tracing of the pulmonary artery occlusion pressure from a patient with mitral regurgitation. Administration of a vasodilator (hydralazine) decreases resistance to forward ejection of the left ventricular stroke volume. As a result, the volume of regurgitant flow into the left atrium is less, and the magnitude of the V wave is decreased. (From Greenberg BH, Rahimtoola SH. Vasodilator therapy for valvular heart disease. JAMA 1981;246:269–72, with permission.)

Recommandations écho

Recommendations for Transthoracic Echocardiography in Mitral Regurgitation (MR)†

Indication	Class
1. For baseline evaluation to quantify severity of MR and left ventricular (LV) function in any patient suspected of having MR	I
2. For delineation of mechanism of MR	I
3. For annual or semiannual surveillance of LV function (estimated by ejection fraction and end-systolic dimension) in asymptomatic severe MR	I
4. To establish cardiac status after a change in symptoms	I
5. For evaluation after MVR or mitril valve repair to establish baseline status	I
6. Routine follow-up evaluation of mild MR with normal LV size and systolic function	III

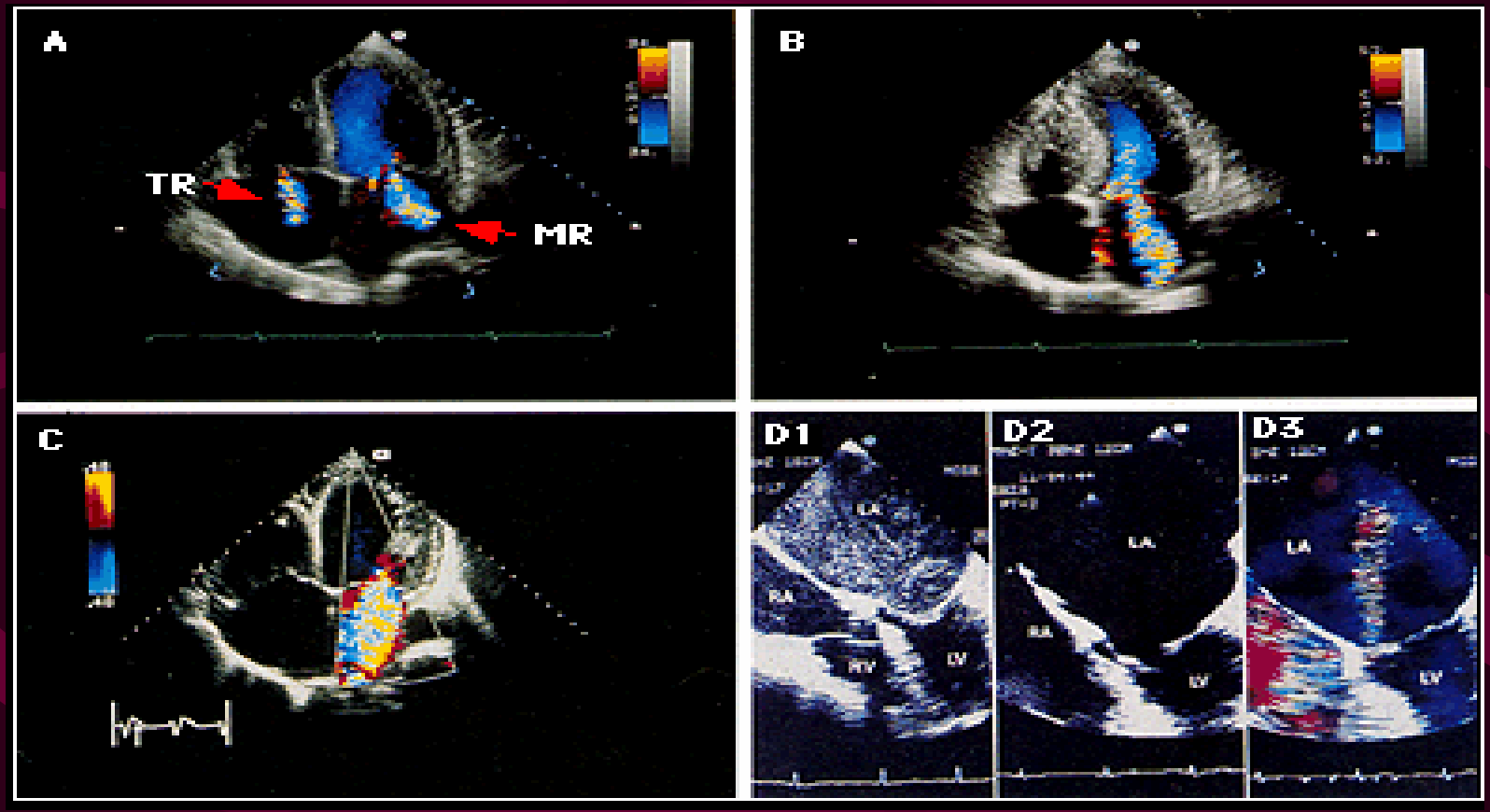
Recommendations for Transesophageal Echocardiography in Mitral Regurgitation (MR)†

Indication	Class
1. Intraoperative transesophageal echocardiography to fuestablish the anatomic basis for MR and to guide repair	I
2. For evaluation of MR patients in whom transthoracic echocardiography provides nondiagnostic images regarding severity of MR, and/or status of left ventricular (LV) function	I
3. In routine follow-up or surveillance of patients with native valve MR	III

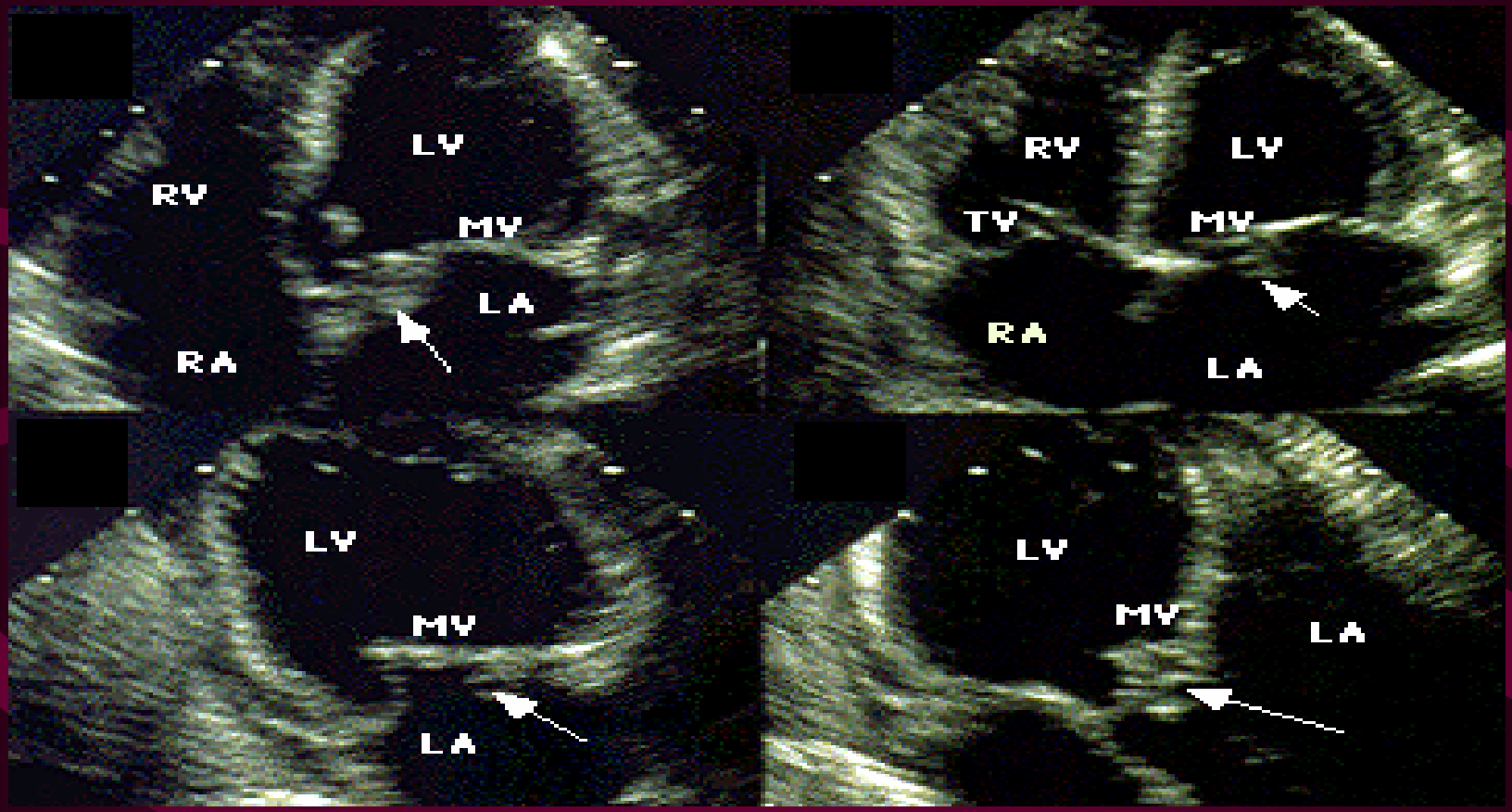
Échographie

- Étiologie ET mécanismes hémodynamiques
- Doppler et color flow doppler;
  - Estimation de la sévérité (distance valve-jet)
- M-mode et écho 2D;
  - Anatomie valve
  - Dilatation cavités

Doppler flow color



Végétations



Critères de sévérités

Echocardiographic and Catheterization Indices in the Three Stages of Chronic Mitral Regurgitation

	Compensated	Transitional	Decompensated
Echocardiography			
End-diastolic dimension, mm	<63	65-68	>70
End-systolic dimension, mm	<42	44-45	>47
Fractional shortening, percent	>34	31-32	<30
Cardiac catheterization			
End-diastolic volume, mL/m2	<110	120-150	>160
End-systolic volume, mL/m2	<45	50-55	>60
Ejection fraction, percent	>60	53-57	<50

Recommandations chirurgie

Recommendations for Mitral Valve Surgery in Nonischemic Severe Mitral Regurgitation

Indication	*Class*
1. Acute symptomatic MR in which repair is likely.	I
2. Patients with NYHA functional Class II, III, or IV symptoms with normal LV function defined as ejection fraction >0.60 and end-systolic dimension <45 mm.	I
3. Symptomatic or asymptomatic patients with mild LV dysfunction, ejection fraction 0.50 to 0.60, and end-systolic dimension 45 to 50 mm.	I
4. Symptomatic or asymptomatic patients with moderate LV dysfunction, ejection fraction 0.30 to 0.50, and/or end-systolic dimension 50 to 55 mm.	I
5. Asymptomatic patients with preserved LV function and atrial fibrillation.	IIa
6. Asymptomatic patients with preserved LV function and pulmonary hypertension (pulmonary artery systolic pressure >50 mm Hg at rest or >60 mm Hg with exercise).	IIa
7. Asymptomatic patients with ejection fraction 0.50 to 0.60 and end-systolic dimension <45 mm and asymptomatic patients with ejection fraction >0.60 and end-systolic dimension 45 to 55 mm.	IIa
8. Patients with severe LV dysfunction (ejection fraction <0.30 and/or end-systolic dimension >55 mm) in whom chordal preservation is highly likely.	IIa
9. Asymptomatic patients with chronic MR with preserved LV function in whom mitral valve repair is highly likely.	IIb
10. Patients with MVP and preserved LV function who have recurrent ventricular arrhythmias despite medical therapy.	IIb
11. Asymptomatic patients with preserved LV function in whom significant doubt about the feasibility of repair exists.	III

Traitements

- En aigu; vasodilatateurs avec inotropes
  - ↓ régurgitation mitrale
  - ↑ débit
  - ↓ congestion pulmonaire
- Pas de traitement spécifique en chronique
- Réparation valve > remplacement

Principes anesthésiques

- Antibioprophylaxie
- Maintien du débit cardiaque
  - FC normale à ↑ légèrement
  - Résistances vasculaires ↓
  - Contractilité cardiaque ↑
  - Précharge normale

Monitoring

- Si régurgitation mitrale sévère…
- Écho transoesophagien
  - Fonction valve mitrale
  - Contractilité
  - Volume IV
- Cathéter pulmonaire
  - Mesure débit
  - Onde v
  - Attention au wedge si régurgitation chronique

Management anesthésique

- Induction standard en maintenant le débit
  - Effet dilutionnel
  - ↑ métabolisme
- Maintenance
  - Gaz
  - Si dysfonction mitrale sévère: opioïde-pancuronium
  - Vasodilatateur
  - Amines; ↑ contractilité
  - Maintien de la précharge

Références

- Bonow RO et al. Guidelines for management of patients with valvular heart disease. ACC/AHA **Circulation** 1998; 98 (18): 1949-84
- Stoeling et al. Valvular heart disease. **Anesthesia and co-existing disease** 2002: 25-44
- Up to date