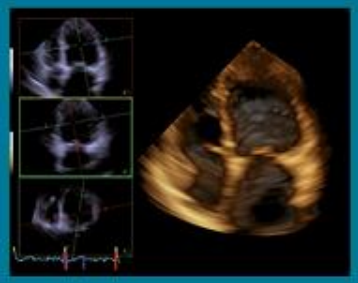


EuroValve

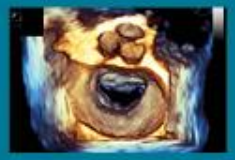
October 24-25, 2014

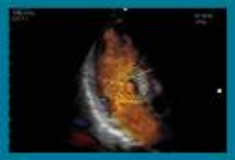
Aortic regurgitation. Physiopathology

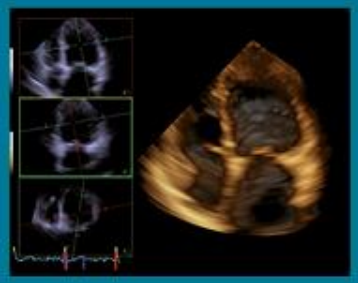
Dr Pilar Tornos

Hospital Vall d'Hebron. Barcelona

Eurovalve 2014







EuroValve

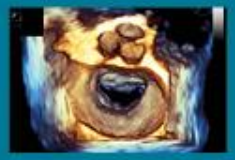
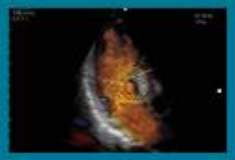
October 24-25, 2014

Faculty disclosure

Pilar Tornos

I have **no financial relationships** to disclose.



Acute AR

Etiology:

Infective endocarditis, aortic dissection, trauma, post ballooon valvuloplasty, post surgical commisurotomy, idiopatic fenestration or cusp rupture

Pathophysiology:

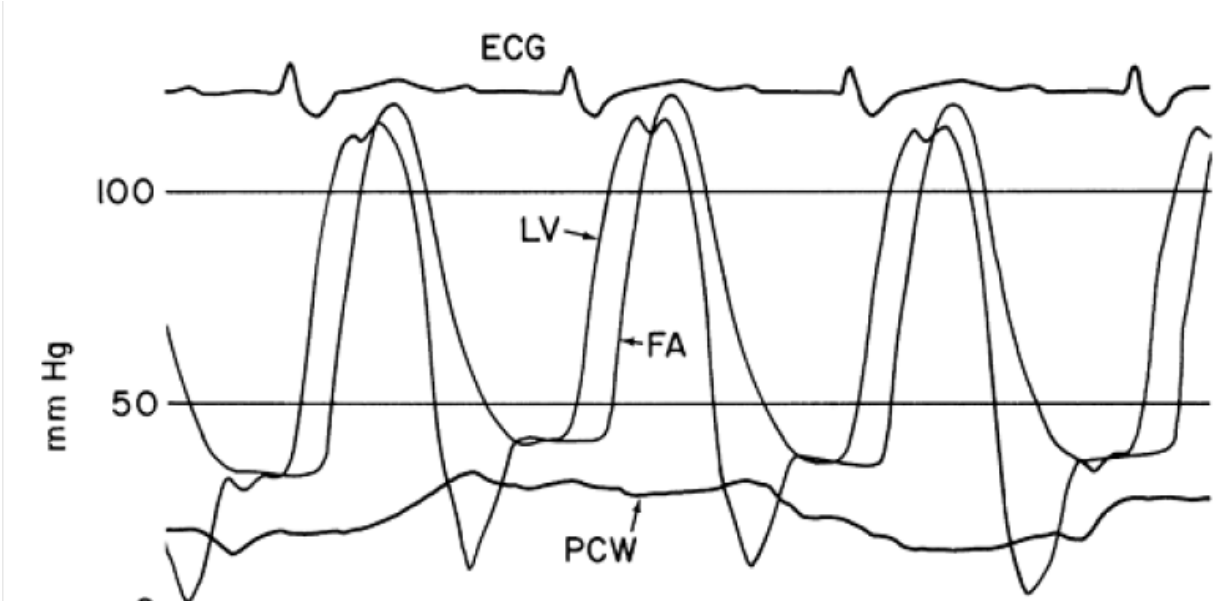
Sudden large regurgitant volume is imposed on a normal size LV

↓

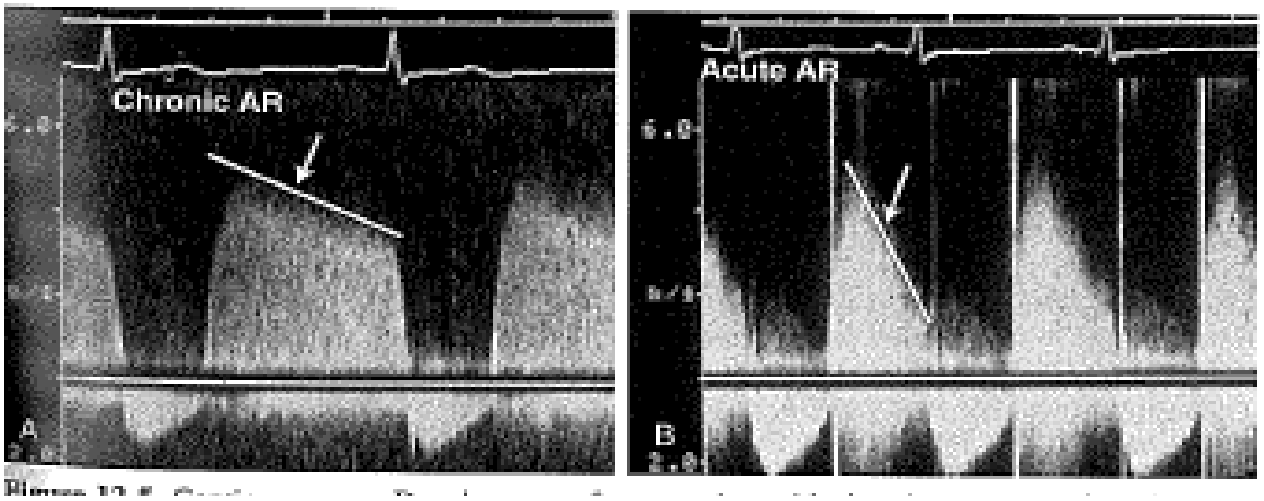
Rapid increase in LVEDP and LAP
Equalization of aortic and LV pressures in diastole

↓

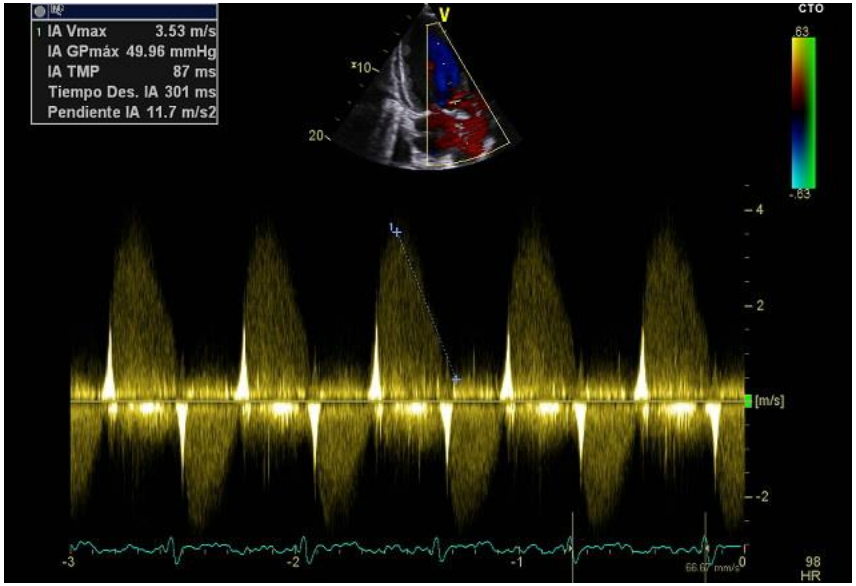
Pulmonary edema, cardiogenic shock
Diminished myocardial perfusion pressure
In the subendocardium

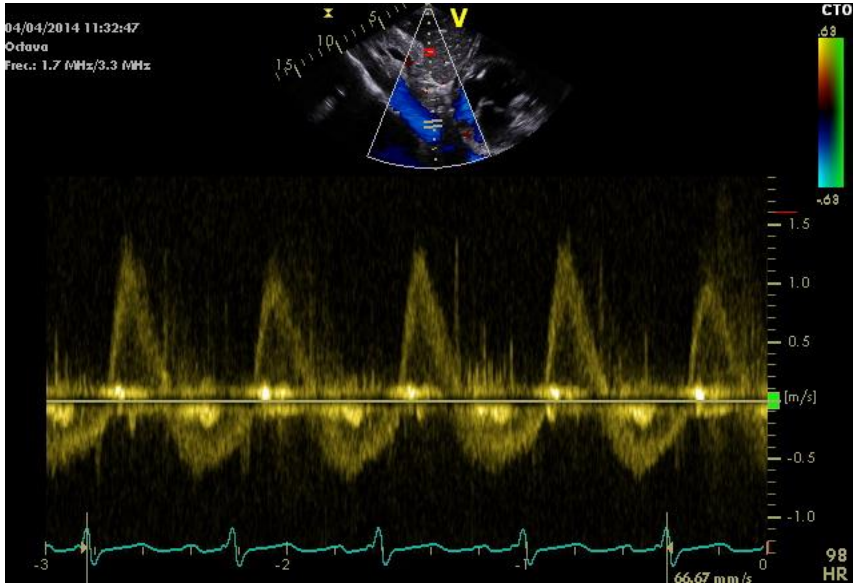


Taken from Grossman , 7 ed



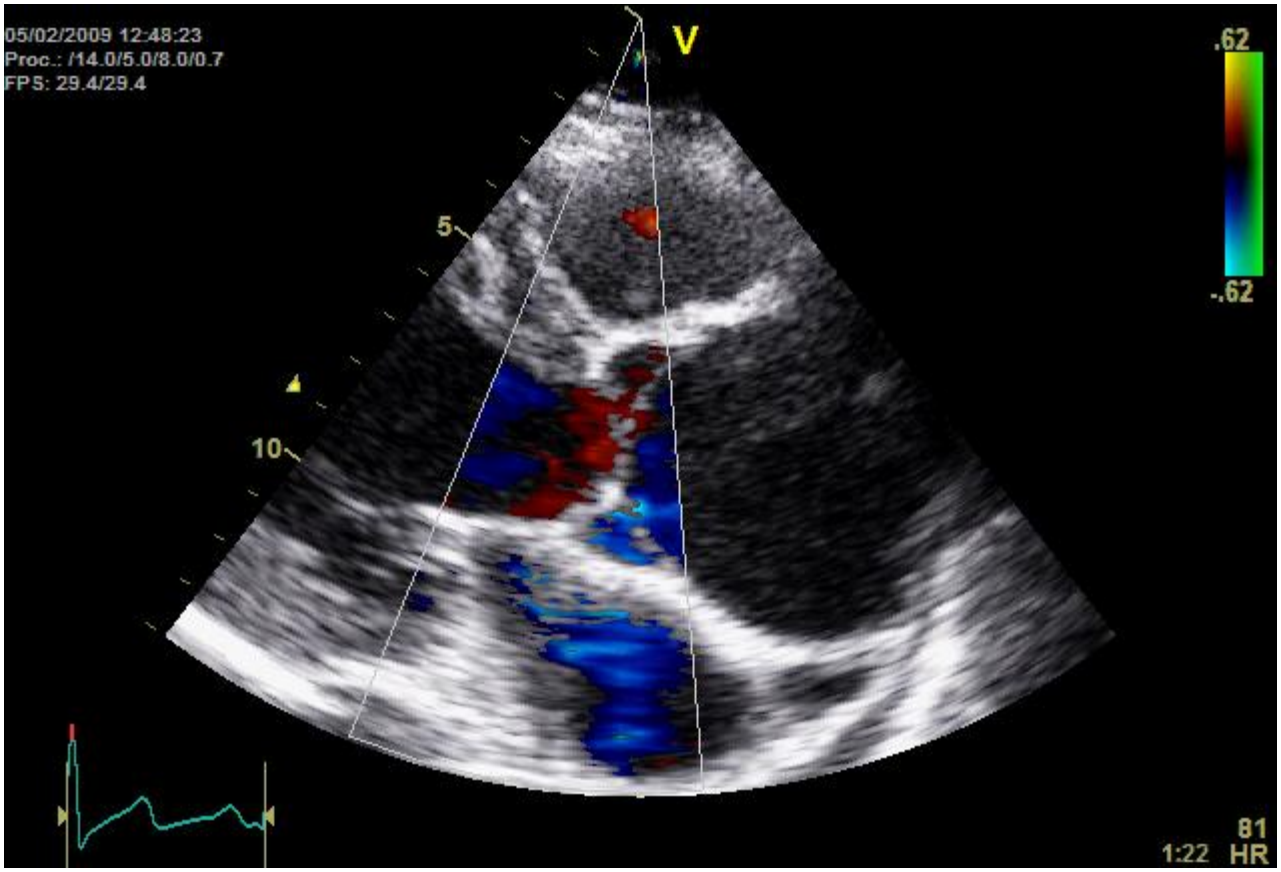
Taken from Otto, 2 edi


IA Vmax 3.53 m/s
IA GPmáx 49.96 mmHg
IA TMP 87 ms
Tiempo Des. IA 301 ms
Pendiente IA 11.7 m/s2
CTO
[m/s]
98
HR


04/04/2014 11:32:47
Octava
Frec.: 1.7 MHz/3.3 MHz
CTO
[m/s]
66.67 mm/s
98
HR

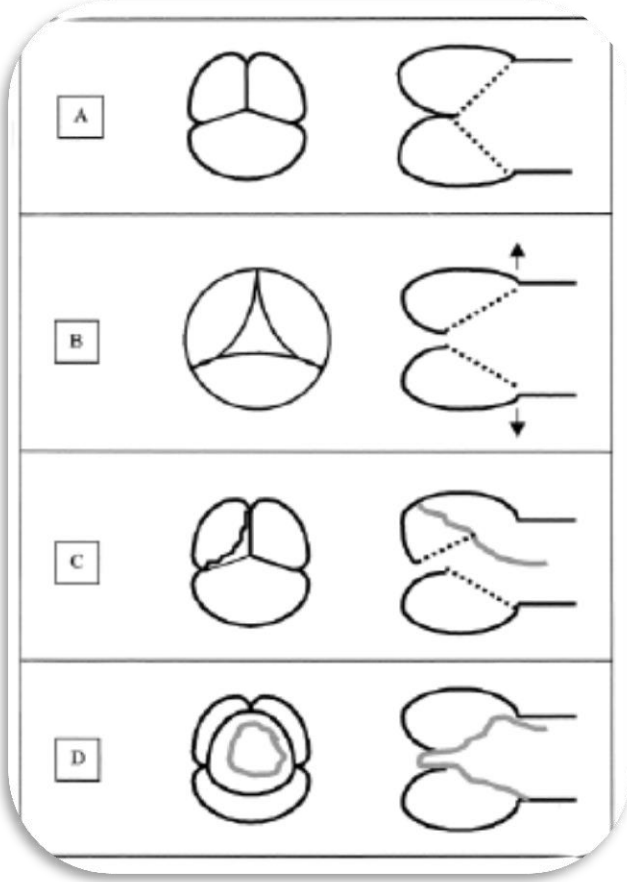
	Chronic AR compensated	Chronic AR decompensated	Acute AR
Physiology LV Volume Ejection Fraction LV EDP	 Increased (ESD<55) Normal (>55%) Normal	 Increased (ESD>55) Normal or decreased Normal	 Normal Normal or decreased Increased
Physical exam Diastolic murmur Pulse pressure Peripheral signs	 Holodiastolic, Wide Present	 Holodiastolic Wide Present	 Early diastole Normal Absent
Clinical Presentation	Asymptomatic	Gradual onset of symptoms,	Sudden onset,pulmonary edema

Acute AR in aortic dissection



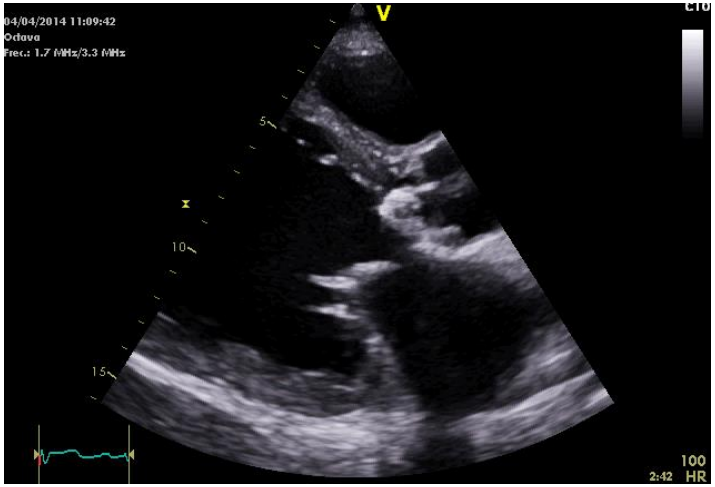
Acure AR in Aortic Dissection.

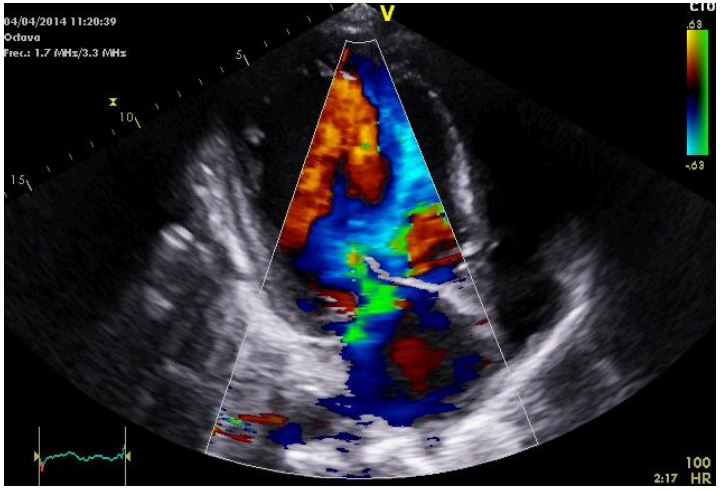
	Degree of Aortic Regurgitation	
	None/Trace/Mild (n = 27)	Moderate/Severe (n = 22)
Incomplete leaflet closure	0	12
Aortic leaflet prolapse	2	8
Intimal flap prolapse	2	3
Bicuspid aortic valve	3	3
Leaflet thickening	17	5

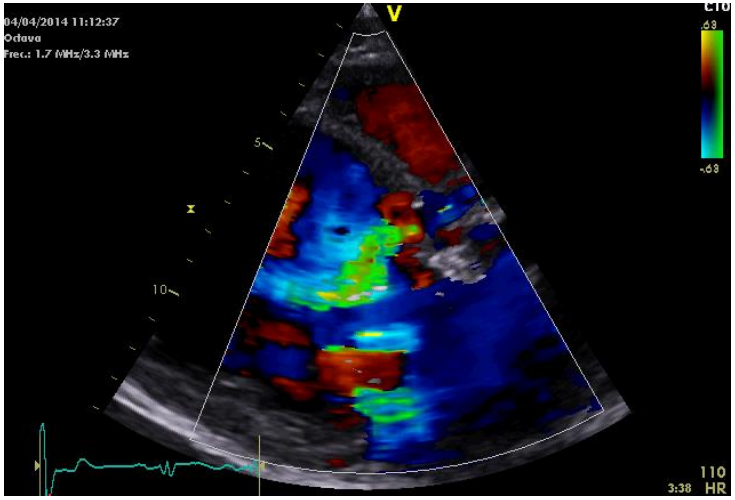


Movsowitz HD, et al. JACC 2000;36:884

Acute AR in IE







Chronic AR. Pathophysiology

VOLUME-PRESSURE OVERLOAD

Increased stroke volume — Increased afterload

Ventricular dilatation — Increase in wall thickness

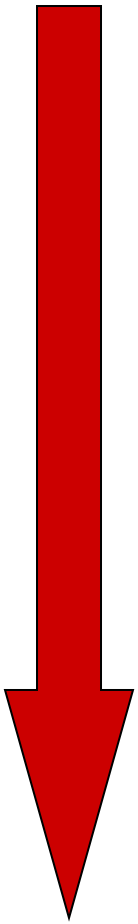
Wall stress maintained

Increase in LV dimension and systolic pressure

Wall thickening fails to keep pace

Increase in wall stress

Excessive afterload: depression of contractility



Stage	Definition	Description
A	At risk	Patients with risk factors for the development of VHD
B	Progressive	Patients with progressive VHD (mild-to-moderate severity and asymptomatic)
C	Asymptomatic severe	Asymptomatic patients who have reached the criteria for severe VHD C1: Asymptomatic patients with severe VHD in whom the left or right ventricle remains compensated C2: Asymptomatic patients who have severe VHD, with decompensation of the left or right ventricle
D	Symptomatic severe	Patients who have developed symptoms as a result of VHD

Stages of Progression of VHD. ACC/ AHA Guidelines 2014

CHRONIC AR

Stage A: At risk of AR

Stage B: Mild- moderate AR

Stage C1: Compensated severe AR (balanced preload/hypertrophy/afterload)
FE>50%, LVESD < 50 mm

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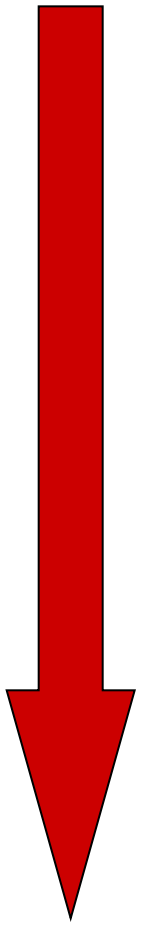
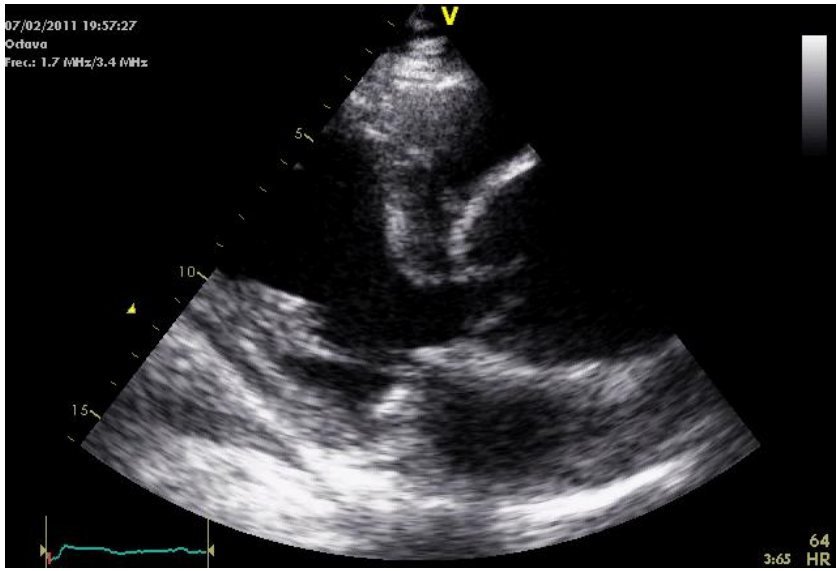
FE<50% or LVESD >50 mm or >25 mm/m2

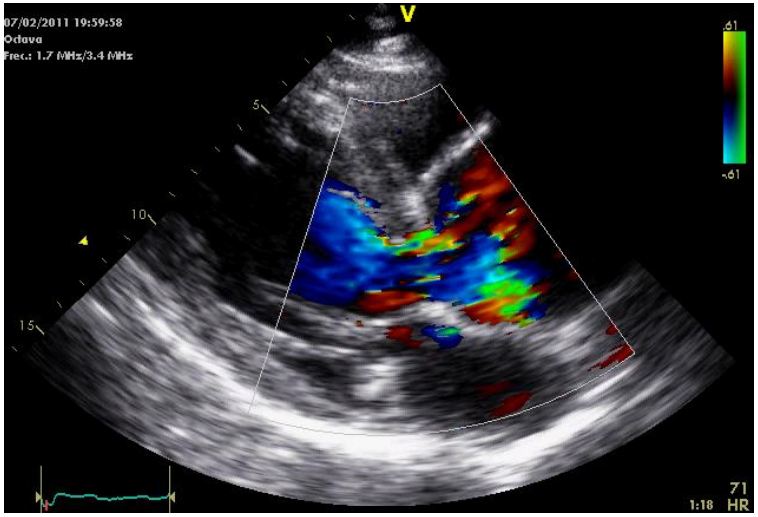
Stage D: Irreversible LV dysfunction



? SYMPTOMS

Chronic AR. Stages A and B





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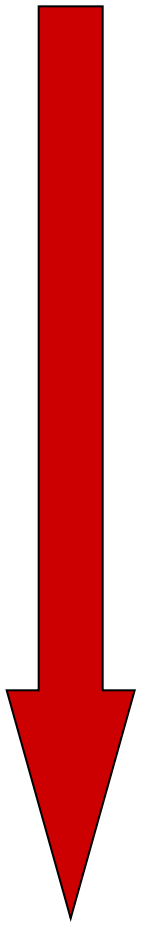
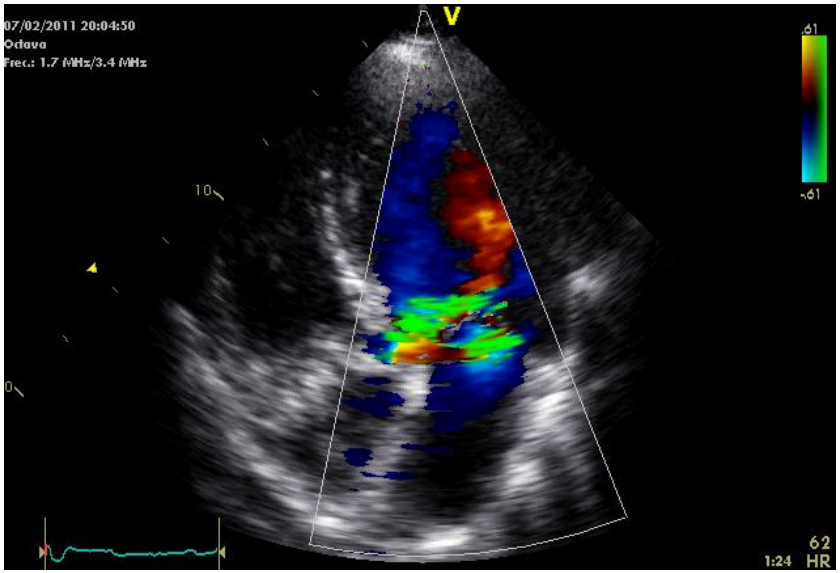
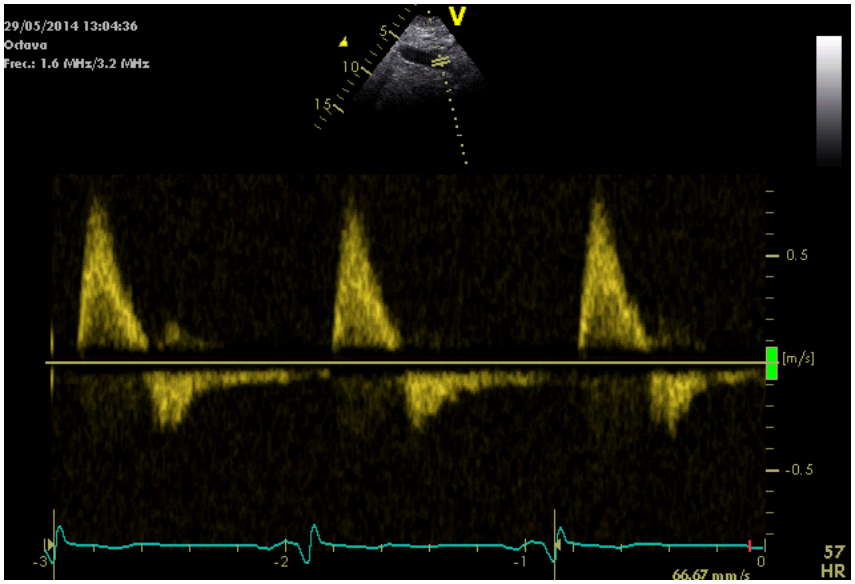


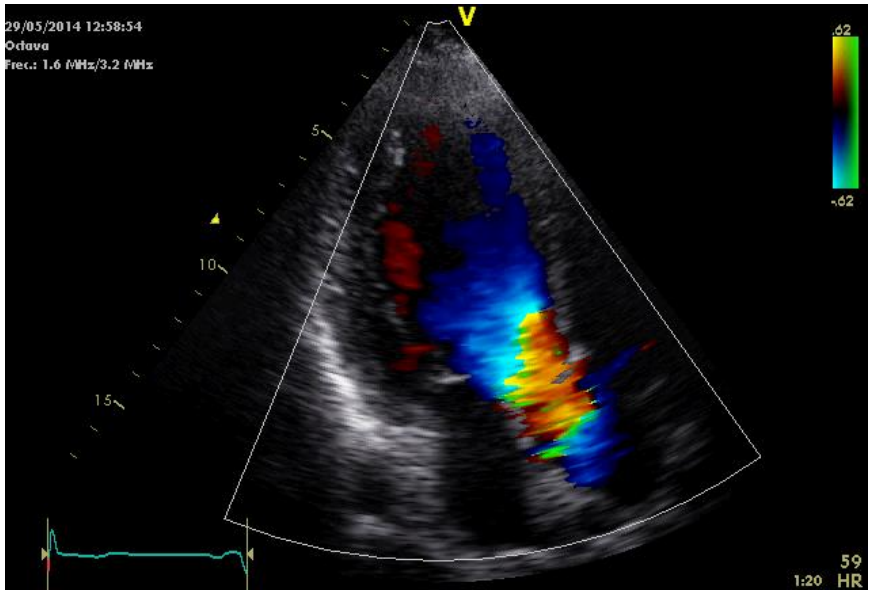
? SYMPTOMS

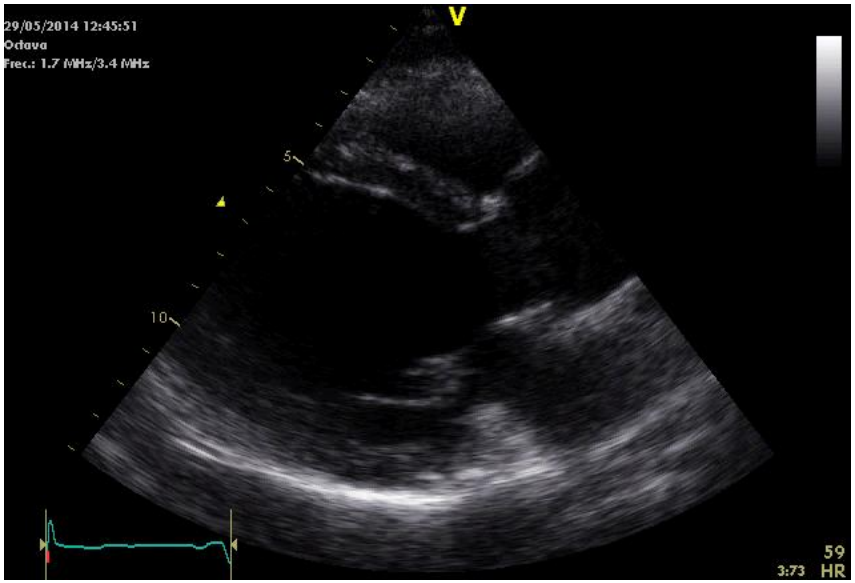
Chronic AR. Stage C1



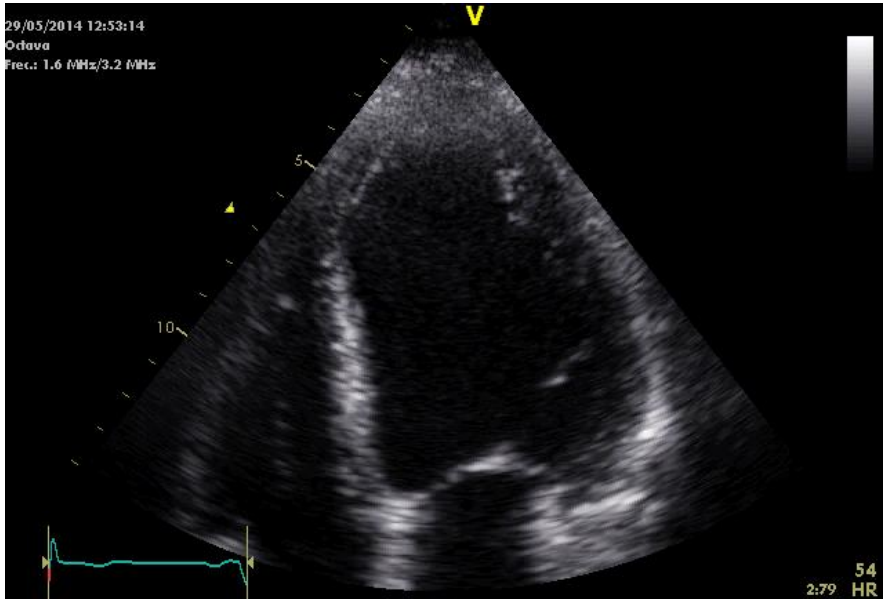


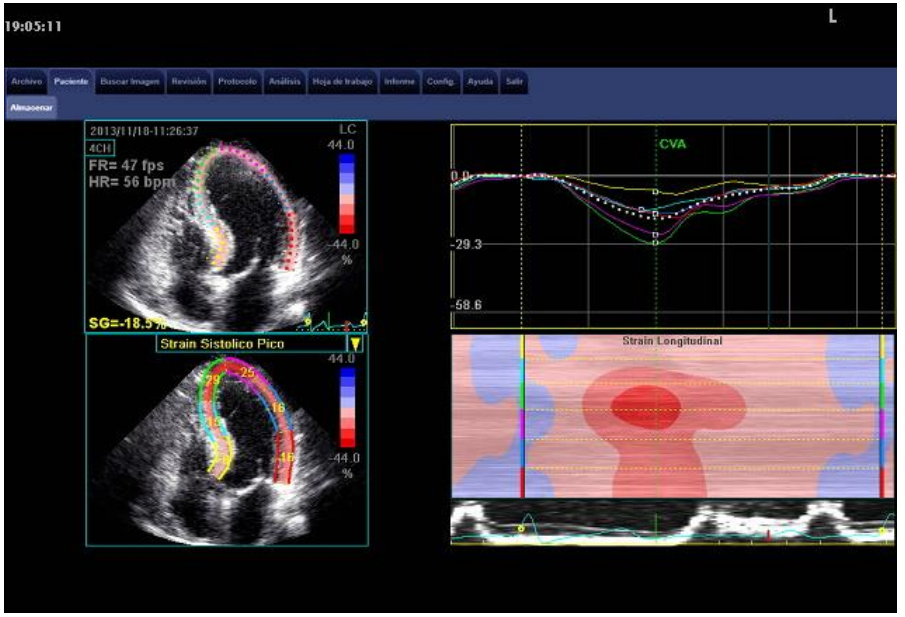
Chronic AR. Stage C1





Chronic AR Stage C1





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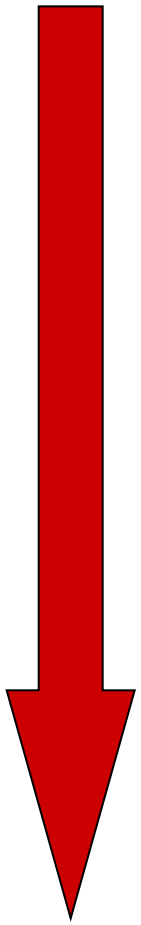
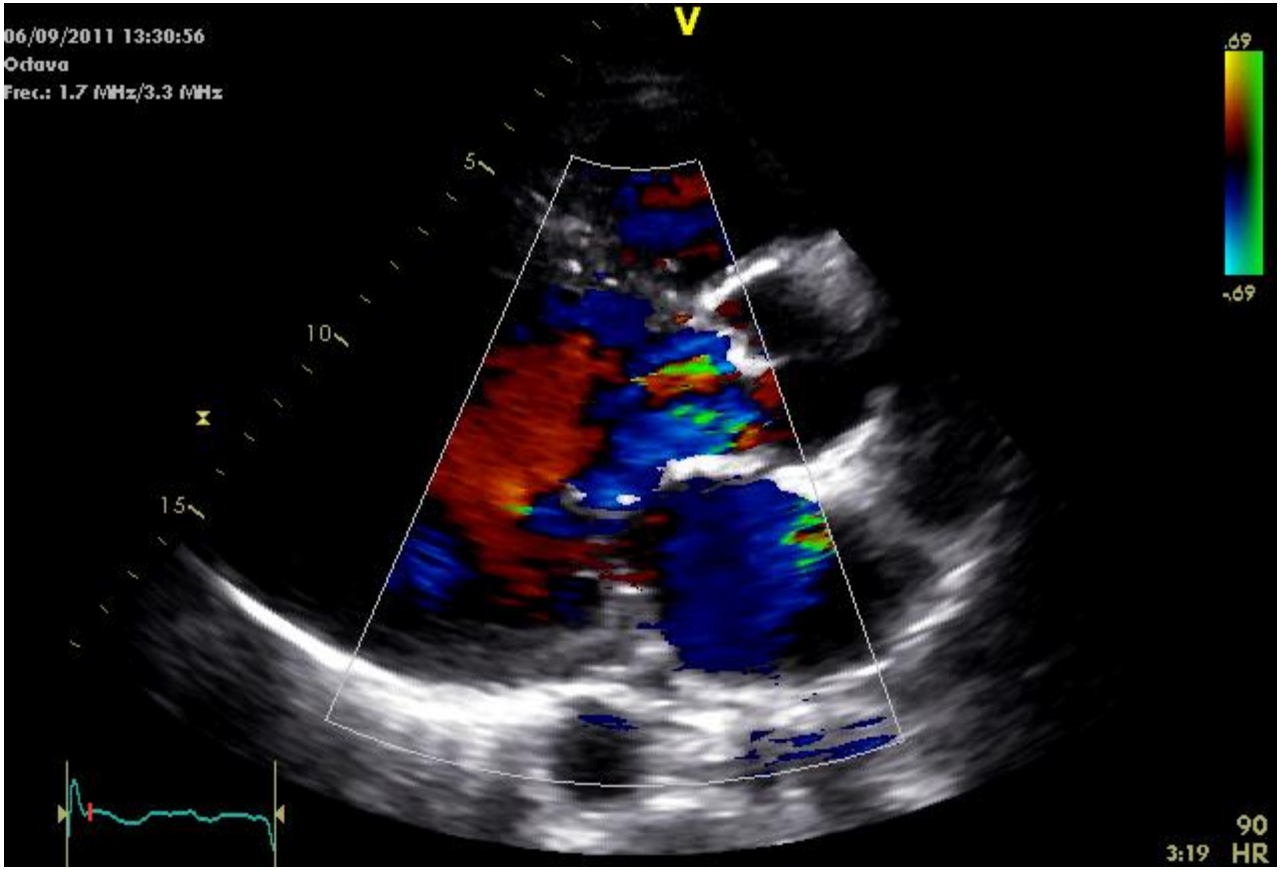
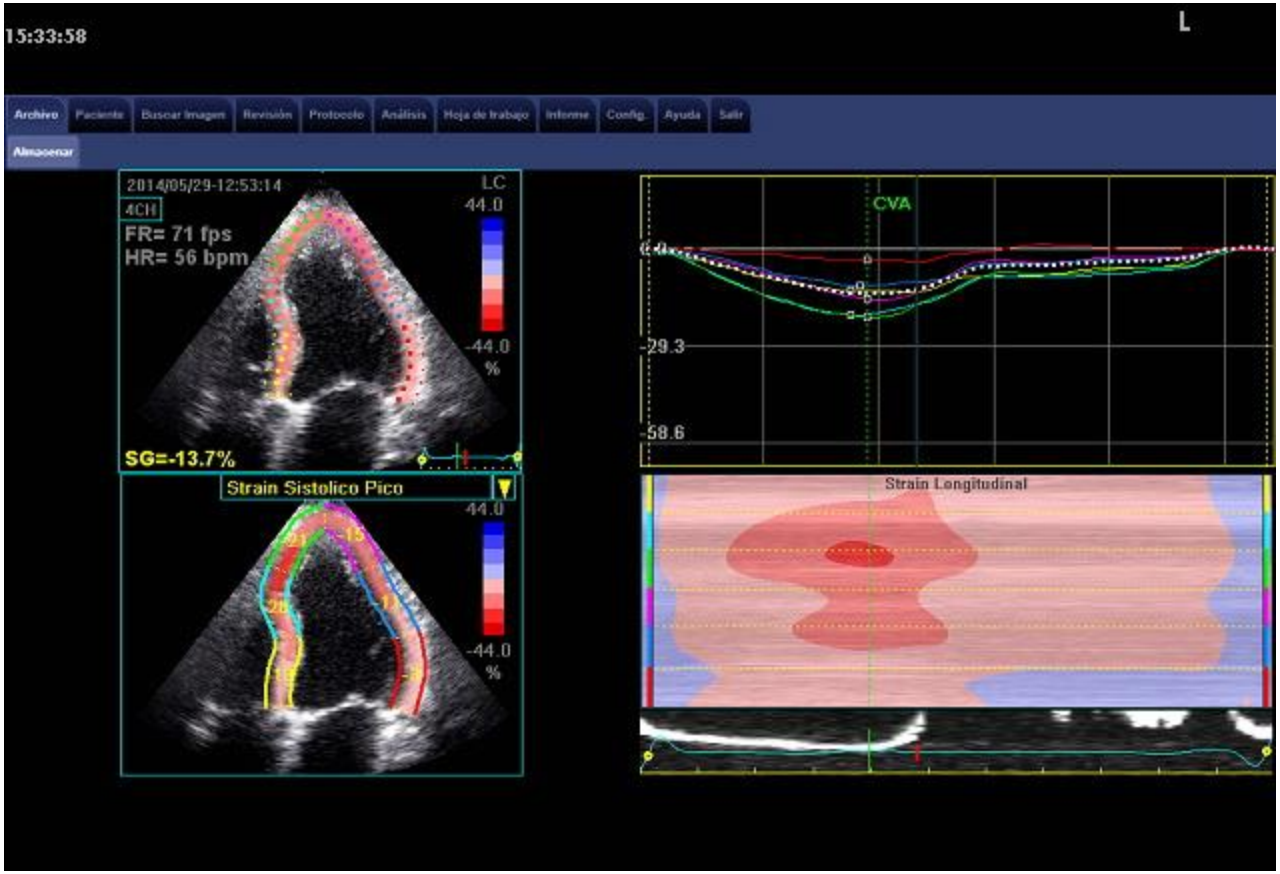


? SYMPTOMS

Chronic AR. Stage C2




15:33:58
L
Archivo
Paciente
Buscar Imagen
Revisión
Protocolo
Análisis
Hoja de trabajo
Informe
Config.
Ayuda
Salir
Almacenar
2014/05/29-12:53:14
LC
4CH
FR= 71 fps
HR= 56 bpm
44.0
-44.0
%
SG=-13.7%
Strain Sistolico Pico
CVA
-29.3
-58.6
Strain Longitudinal

CHRONIC AR

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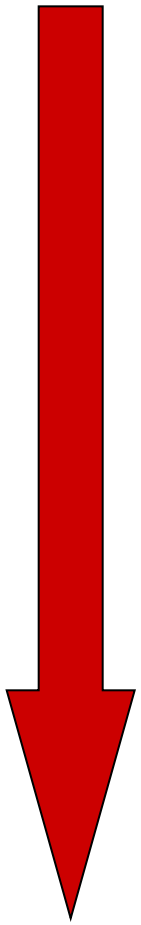

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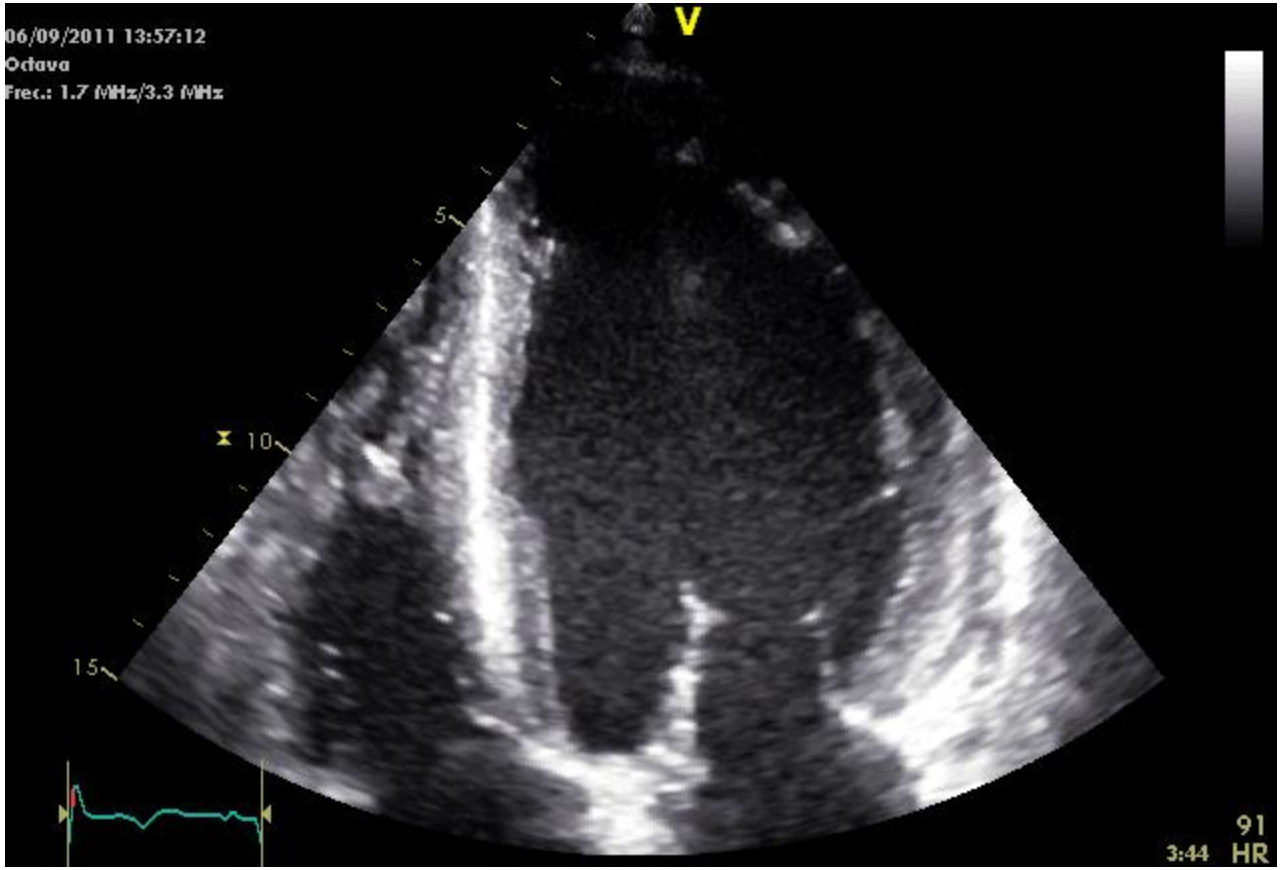
SYMPTOMS

Chronic AR. Stage D



Final comments

- The pathophysiology of both acute and chronic AR is well established
- Clinical and Echo-Doppler evaluation are needed for diagnosis and follow up
- Knowledge of pathophysiology is crucial for the correct management of patients with AR