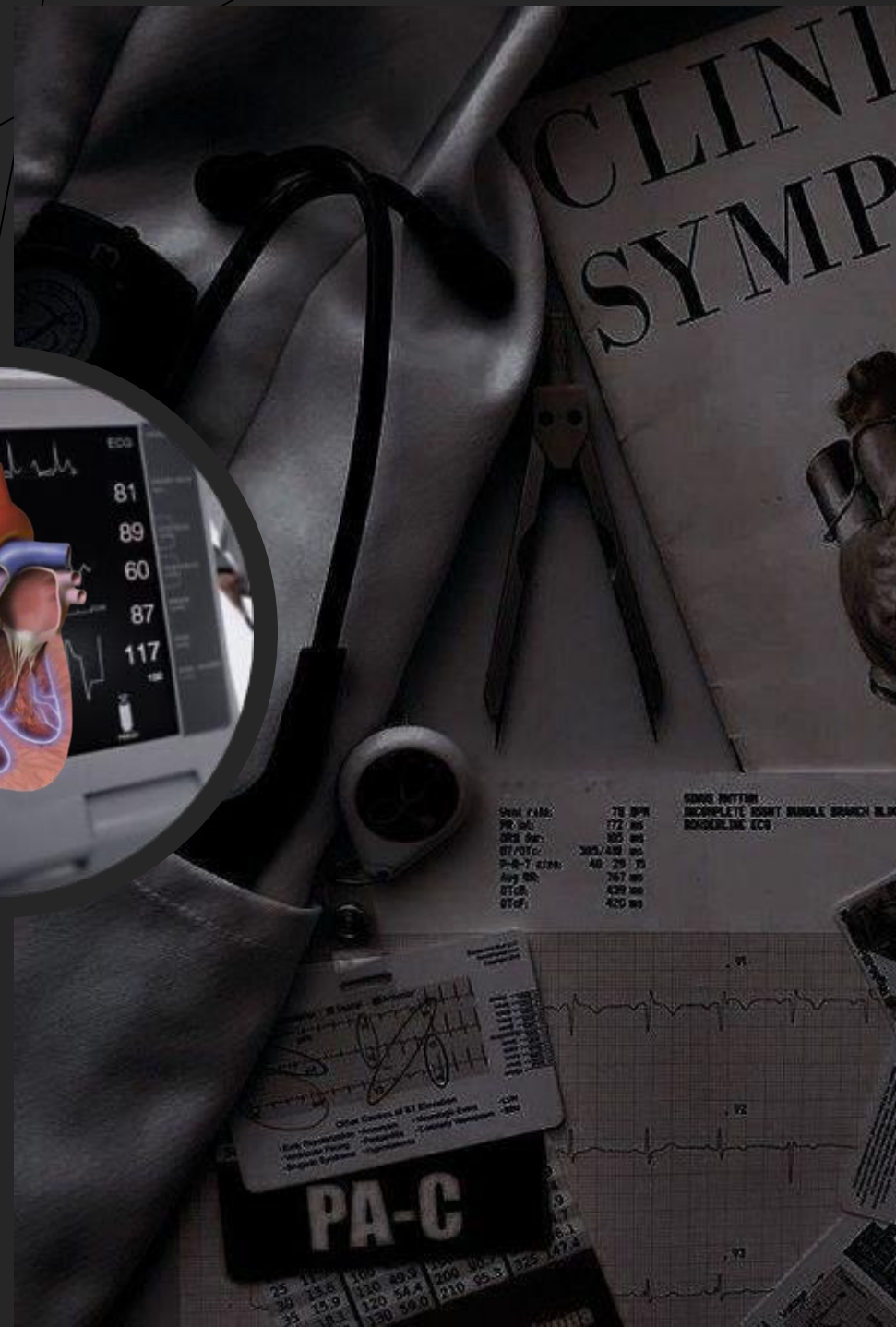
ATRIAL FIBRILLATION

-Rafat Dmour
-Dalia Dmour



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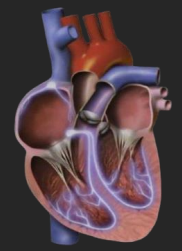
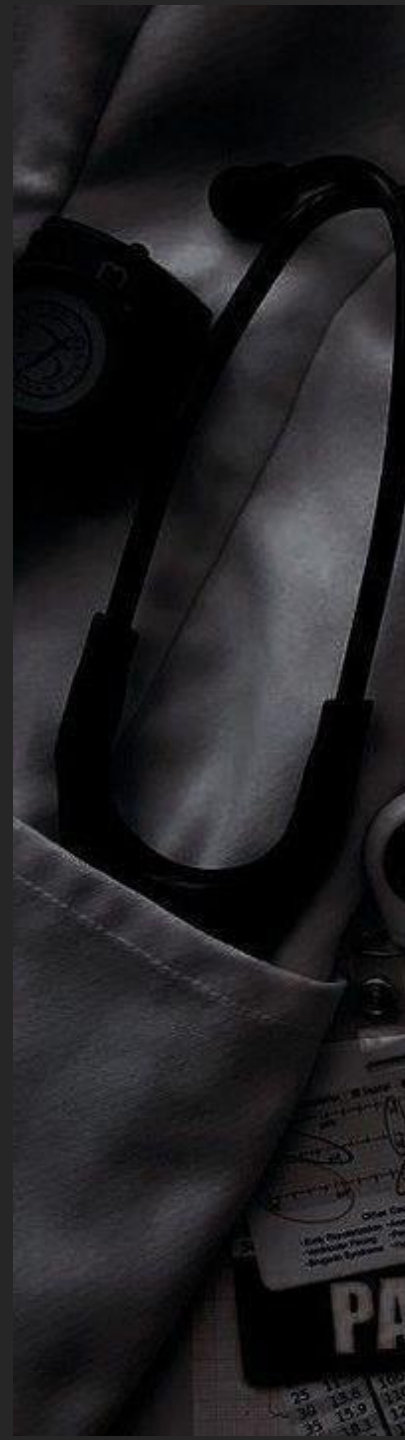


CARDIAC ARRYTHMIA

- ORIGIN
  - SUPRA VENTRICULAR
  - VENTRICULAR
- RATE
  - FAST
  - SLOW
- RYTHEM
  - REGULARLY IRREGULAR
  - IRREGULARLY IRREGULAR



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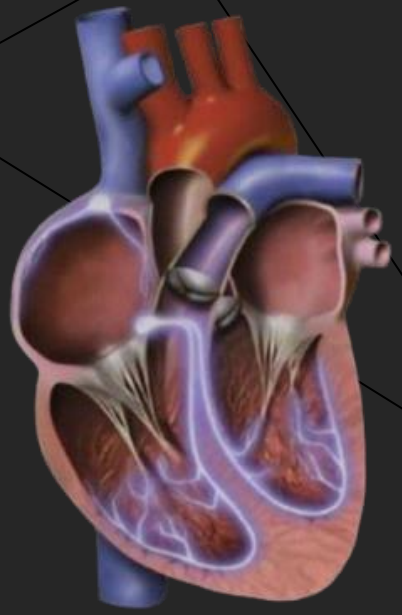
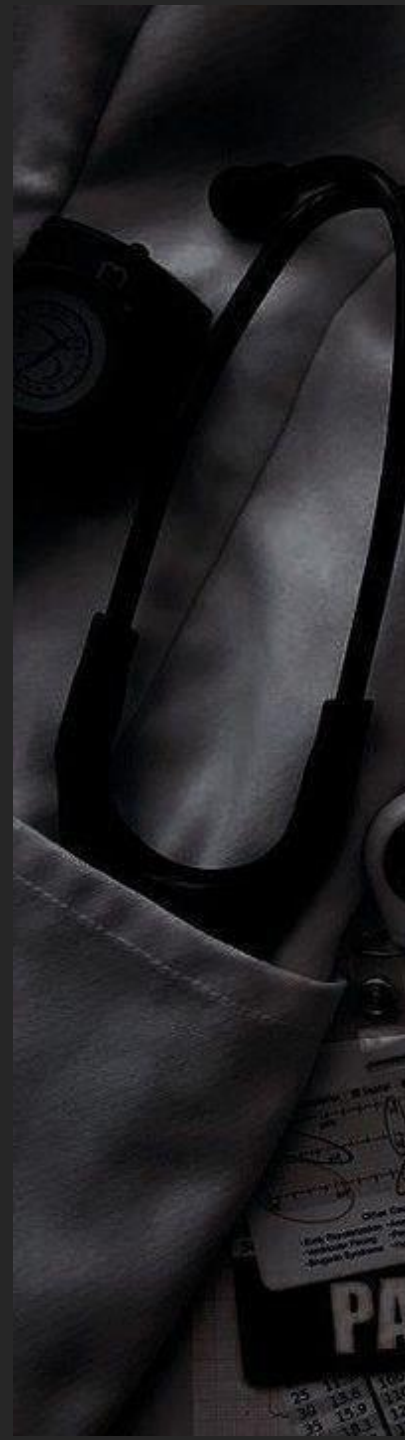


- Rapid, irregular and unsynchronized beating of the atrial chambers of the heart.



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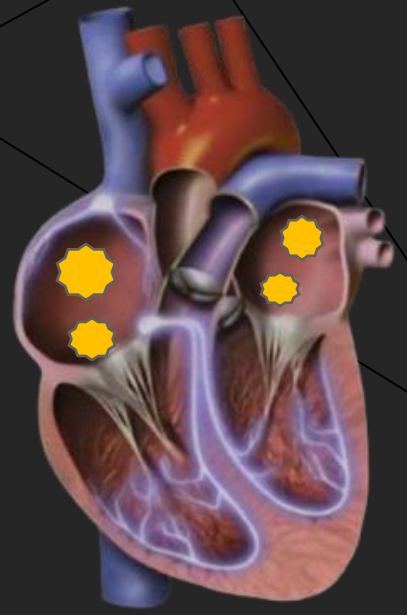
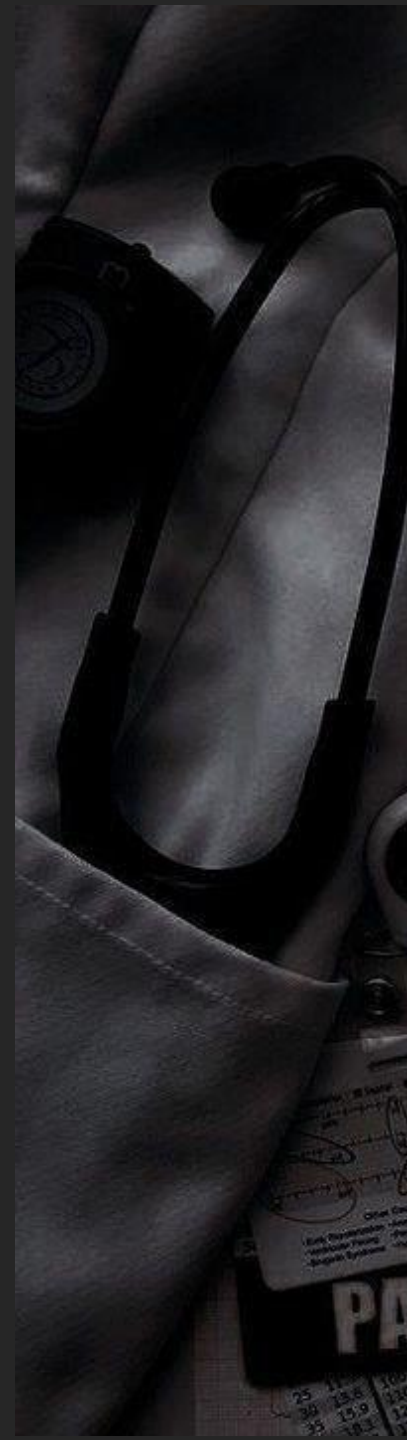


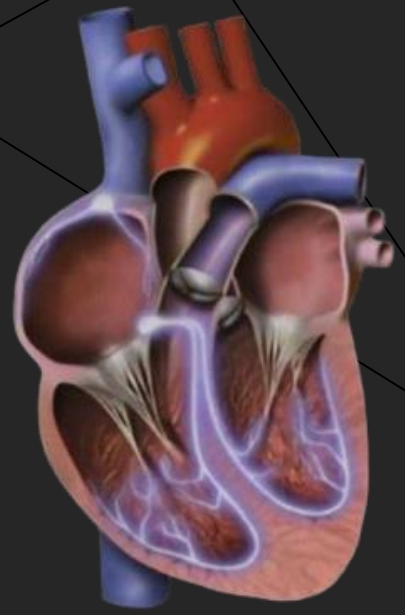
PATHOPHYSIOLOGY

1. Multiple foci in the atria fire continuously in a chaotic pattern, causing a totally irregular, rapid ventricular rate. Instead of intermittently contracting, the atria quiver continuously.

2. Atrial rate is over 400 bpm, but most impulses are blocked at the AV node so ventricular rate ranges between 75 and 175.
(if >110 is called atrial fibrillation rapid ventricular response).

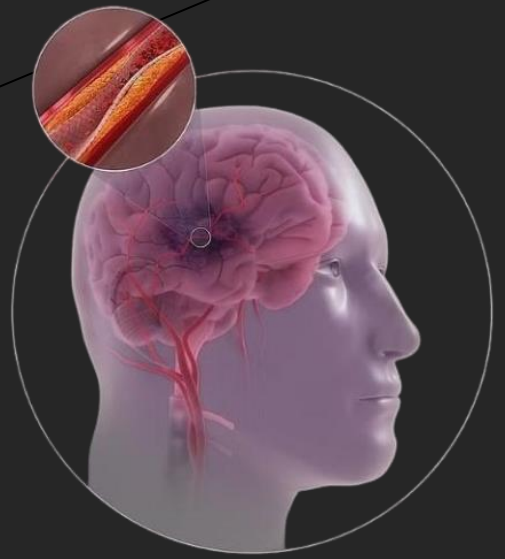


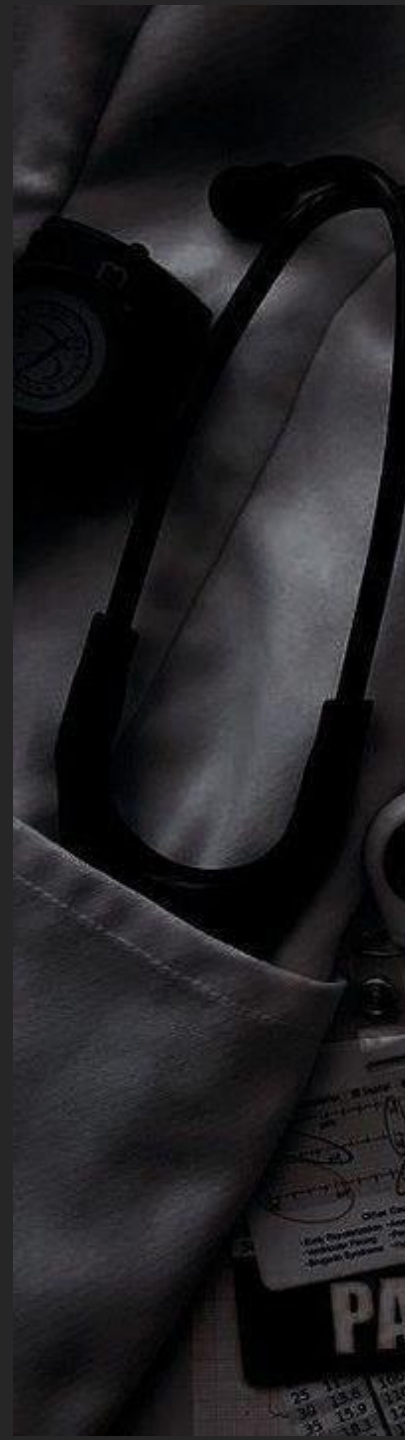
ATRIAL FIBRILLATION



PATHOPHYSIOLOGY

3. Decrease simultaneous contraction of atrium makes the blood stagnant > formation of thrombi (more at left atrial appendage) > emboli to different organs.
(Stroke, MI, Mesenteric ischemia, and acute lower limb ischemia)





CAUSES

Left atrial dilatation

HTN
HF
Mitral valve stenosis

Direct damage to the atrium

Alcohol , smoking, pericarditis, sepsis, and coronary artery diseases

Increase basal metabolic rate

hyperthyroidism and hyperadrenergic state (Stress, pheochromocytoma, amphetamine and cocaine)

Hypoxia
(Lung diseases)

pneumonia, COPD, and pulmonary embolism

Paroxysmal fibrillation:

Intermittent episodes of Afib lasting less than 1 week at a time .

Persistent:

Intermittent episodes of Afib, with at least 1 episode lasting longer than 1 week .

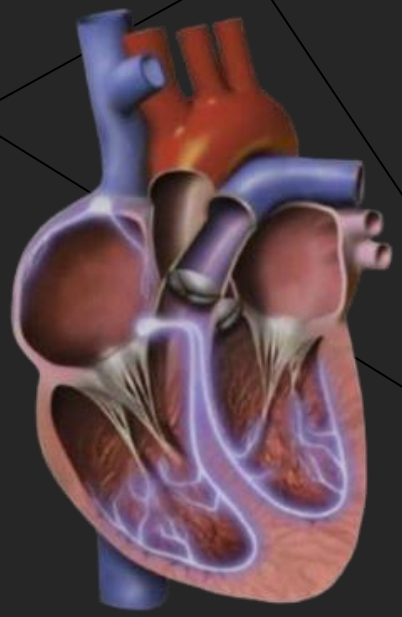
Long-standing persistent:

Ongoing Afib for > 12 months

Permanent:

Continuous Afib that failed all attemps at restortion of sinus rhythem

LONE AF

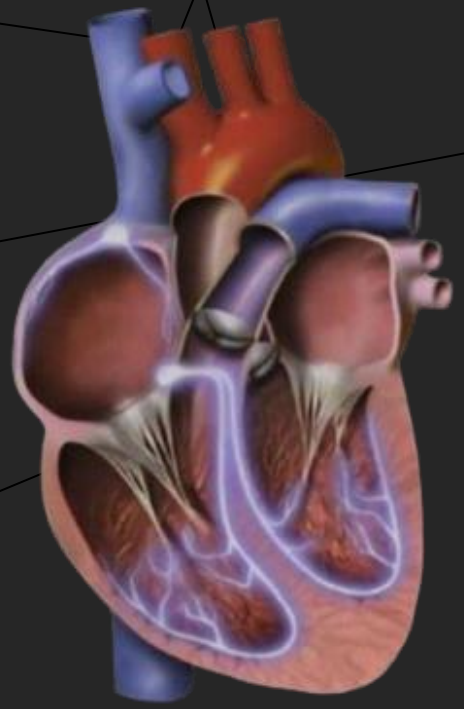


The term "lone AF. Lone AF has generally referred to patients with paroxysmal, persistent, or permanent AF who have no structural heart disease. It has primarily been applied to patients ≤60 years of age

CLINICAL MAIFESTATIOS

Symptoms:

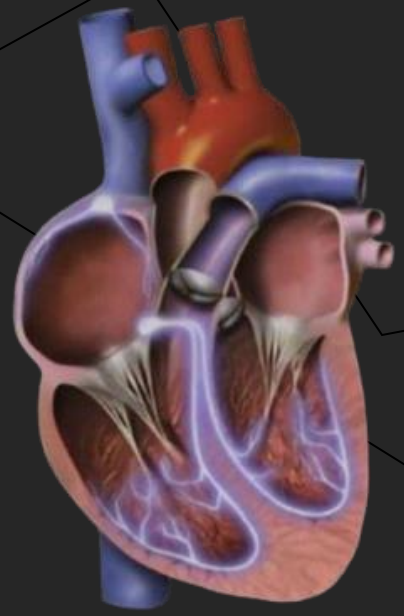
1. Palpitation, fatigue and exertional dyspnea
2. Low output dizziness, syncope and angina
3. Emboli manifestations: stroke, ischemic limbs ..
Etc.



Signs:

irregularly irregular pulse, signs of heart failure if it occurs.

INVESTIGATIOS



1.ECG: diagnostic test.

2 .Cardiac enzymes and echo: ischemic heart diseases diagnosis as a cause

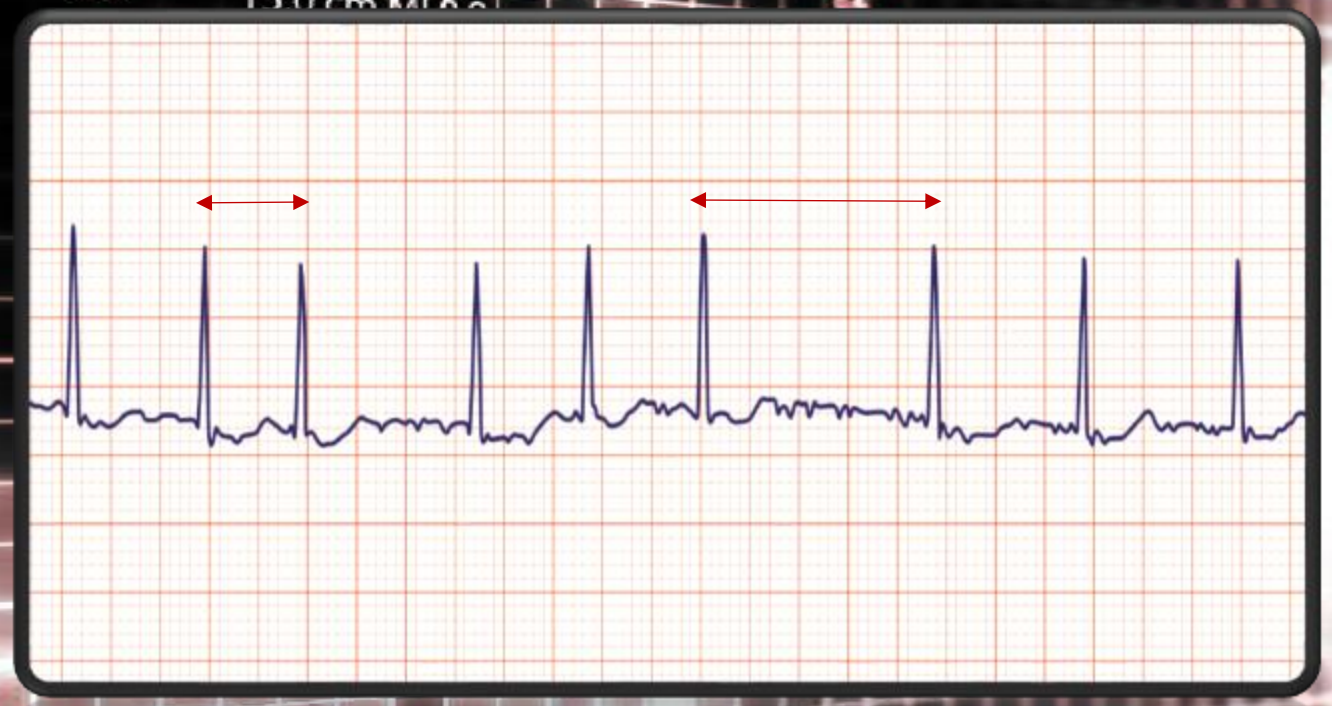
3 .TSH, T4 and T3: hyperthyroidism should be excluded.

ECG

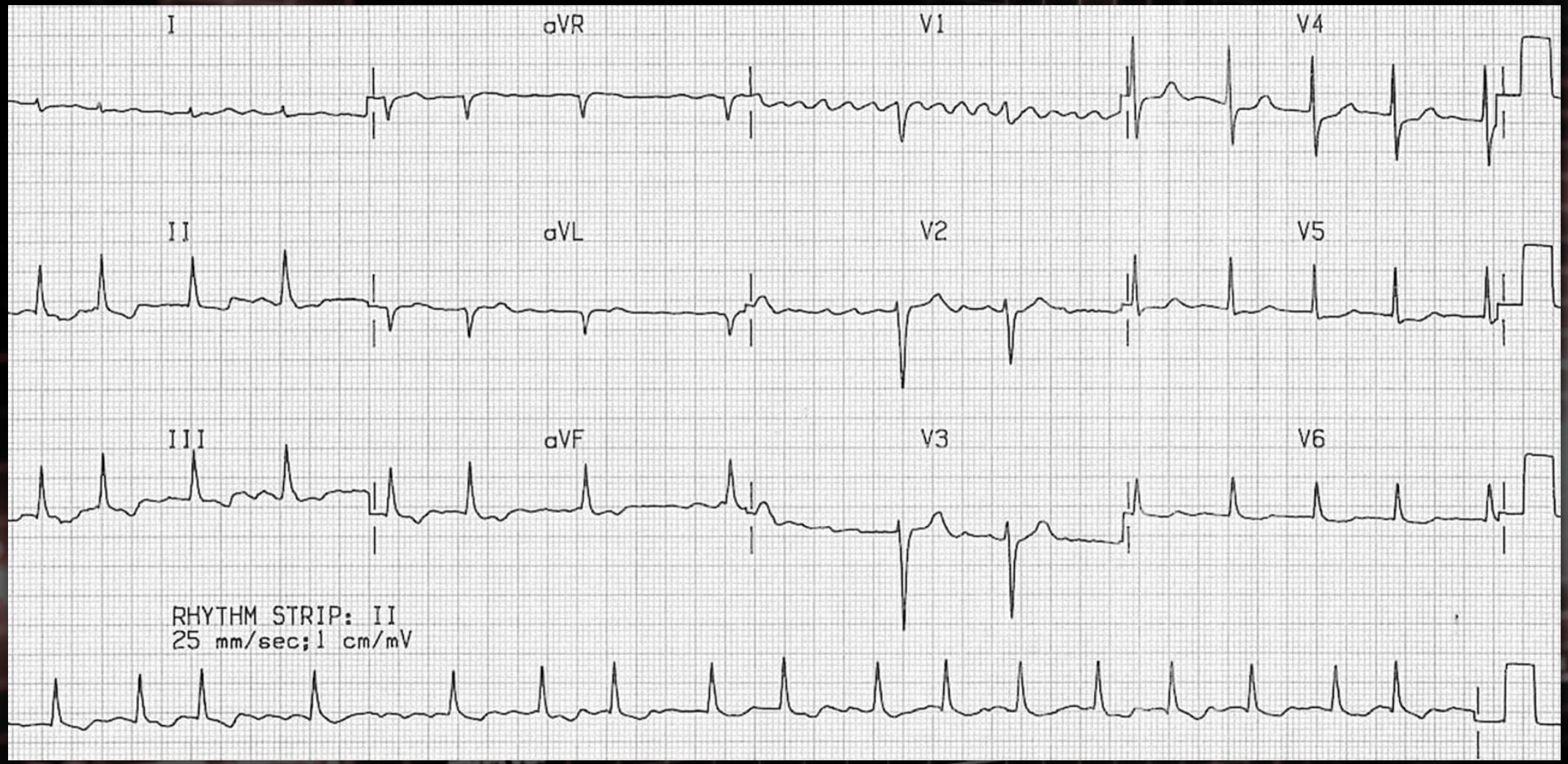

83
P2-4AC
15.0 cm MI 0.9
Gen TIs 1.1
[2d] G78/71 d
FA4/P90
HAR/FSI0
[C] G50/0.80 kHz
FA5/F1/8
TDI
Amplitude (V)
T
U
S-T
interval
2.5
3
Time (s)
3.5

ECG

Irregularly irregular rhythm (irregular **RR** intervals and excessively rapid series of tiny, erratic spikes on ECG with a wavy baseline and no identifiable P waves)



ECG



ECG

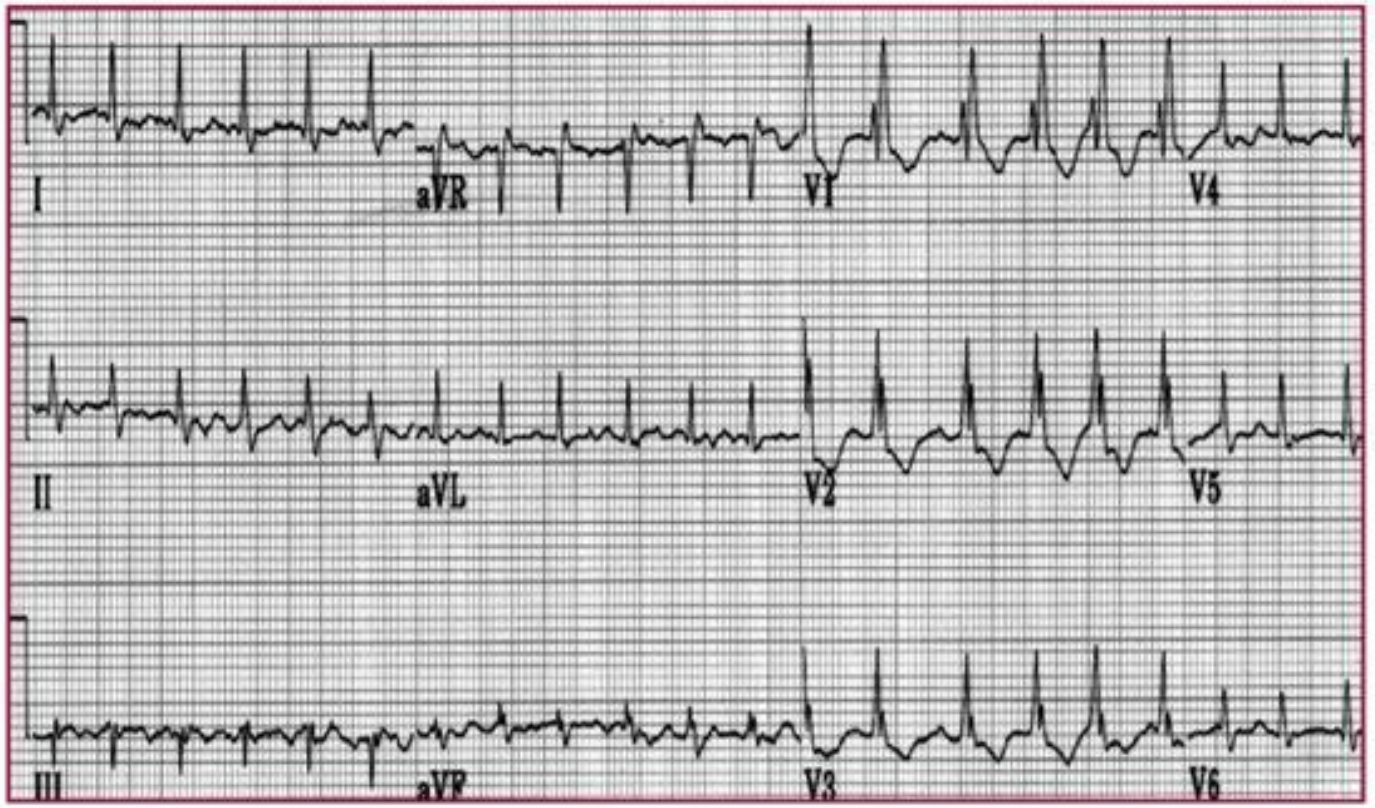
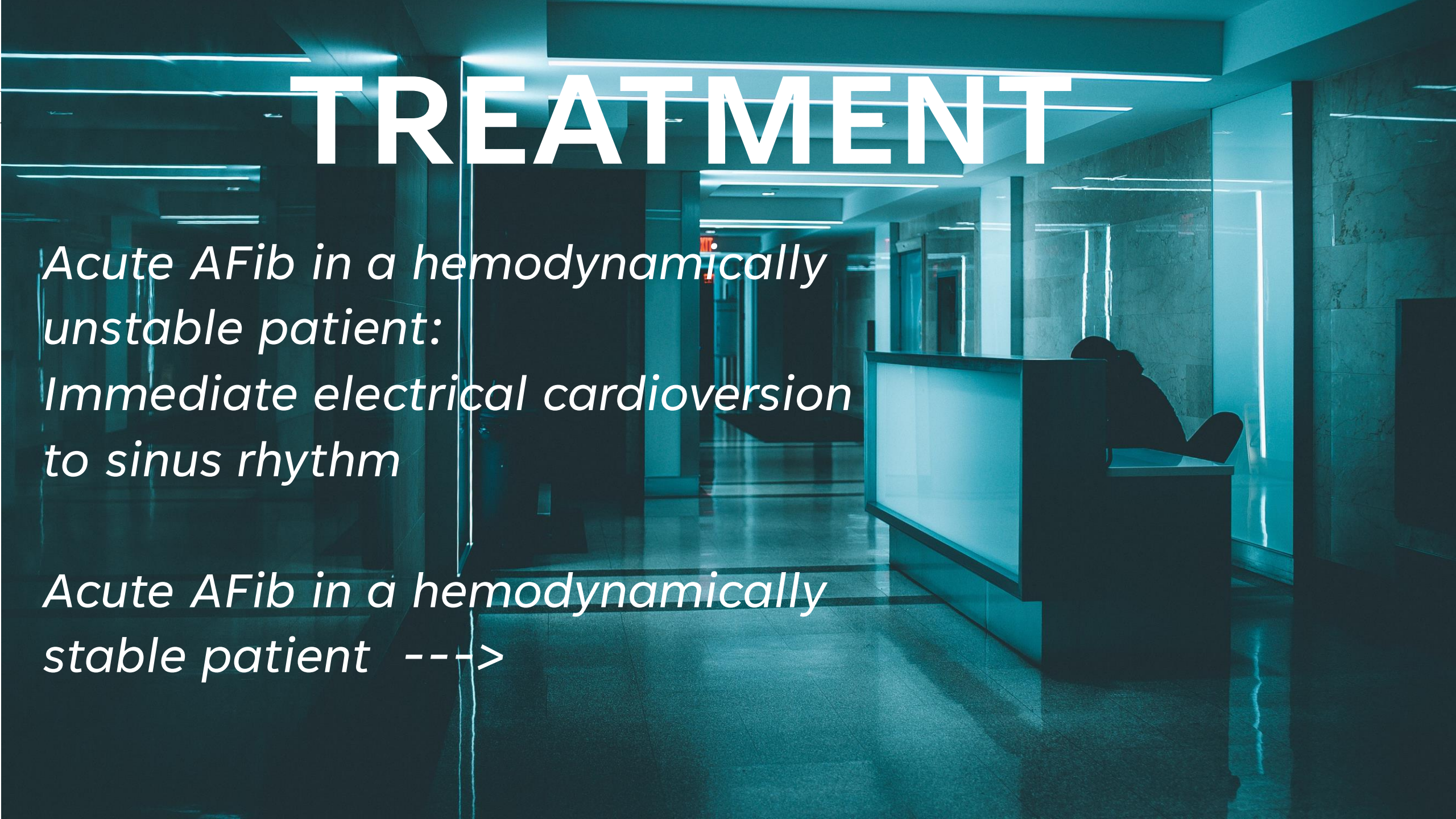


Figure 1. Electrocardiogram showing atrial fibrillation with rapid ventricular rate.


TREATMENT



TREATMENT

Acute AFib in a hemodynamically unstable patient:
Immediate electrical cardioversion to sinus rhythm

Acute AFib in a hemodynamically stable patient --->

RATE CONTROL

Target heart rate is < 110 bpm .

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

RATE CONTROL

β-Blockers are the preferred agent

If left ventricular systolic dysfunction is present, ideal choice is metoprolol succinate as it will treat both HFrEF and AFib rate control. Can also consider digoxin or amiodarone (useful for rhythm control).

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

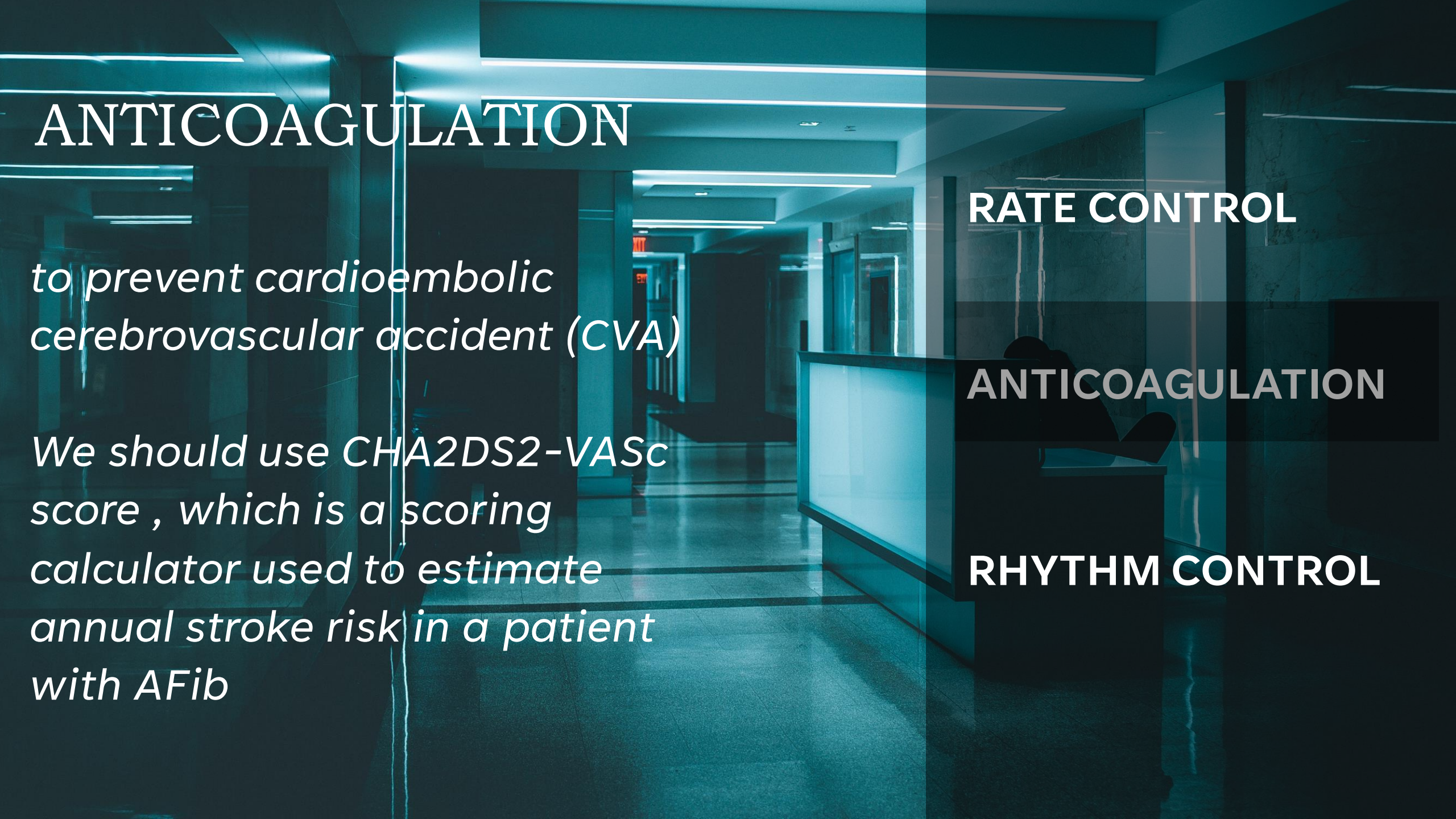
RATE CONTROL

*CCBs such as **Diltiazem** are an alternative if patient does not have HFrEF .*

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL



ANTICOAGULATION

to prevent cardioembolic cerebrovascular accident (CVA)

We should use CHA2DS2-VASc score , which is a scoring calculator used to estimate annual stroke risk in a patient with AFib

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

ANTICOAGULATION

Letter	Risk factor	Score
C	Congestive heart failure/LV dysfunction	1
H	Hypertension	1
A_2	Age ≥75	2
D	Diabetes mellitus	1
S_2	Stroke/TIA/thrombo-embolism	2
V	Vascular disease*	1
A	Age 65–74	1
S	Sex category (i.e., female sex)	1
	Maximum score	9

Congestive heart failure/LV dysfunction means LV ejection fraction ≤40%. Hypertension includes the patients with current antihypertensive medication. *Prior myocardial infarction, peripheral artery disease, aortic plaque. LV: left ventricular, TIA: transient ischemic attack

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

For patients with CHADSVASC score >1, anticoagulation is generally indicated unless **high bleeding risk.**

ANTICOAGULATION

For patients with *mechanical valves*, *mitral valvular disease*, or *ventricular assist devices*, **warfarin** is the only oral anticoagulant available .

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

ANTICOAGULATION

For other patients, direct oral anticoagulants (DOACs) can be used.

Factor Xa inhibitors
Apixaban, Rivaroxaban Edoxaban

direct thrombin inhibitors
(Dabigatran)

RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

ANTICOAGULATION

Monitoring :

-An INR of 2 to 3 is the anticoagulation goal range for warfarin.

-DOACs do not require lab monitoring.

-Acute warfarin-associated bleeding can be reversed with fresh frozen plasma (FFP), prothrombin complex concentrate (PCC).

RATE CONTROL

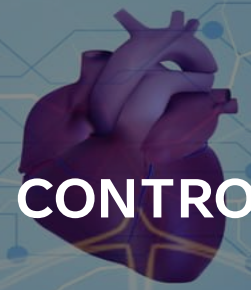
ANTICOAGULATION

RHYTHM CONTROL

RHYTHM CONTROL (CARDIOVERSION)

Candidates for cardioversion include those who are *hemodynamically unstable*, those who are *symptomatic*, and those who are having their *first ever case of AFib*.

That being said, The AFFIRM trial showed that rate control is noninferior to rhythm control in treatment of AFib or in improving mortality.



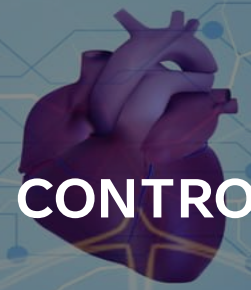
RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

RHYTHM CONTROL (CARDIOVERSION)

If rhythm control is selected as a treatment strategy, *electrical* cardioversion is *preferred* over *pharmacological* cardioversion. Attempts should be made to control ventricular rate before attempting DC cardioversion.



RATE CONTROL

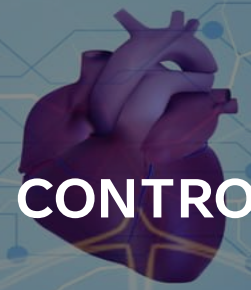
ANTICOAGULATION

RHYTHM CONTROL

RHYTHM CONTROL (CARDIOVERSION)

If AFib present for >48 hours (or unknown period of time), risk of embolization during cardioversion is significant (2% to 5%). Anticoagulate patients for 3 weeks before and at least 4 weeks after cardioversion.

To avoid waiting 3 weeks for anticoagulation, obtain a transesophageal echocardiogram (TEE) to image the left atrium (LA). If no thrombus is present, start IV heparin and perform cardioversion within 24 hours. Patients still require 4 weeks of anticoagulation after cardioversion.



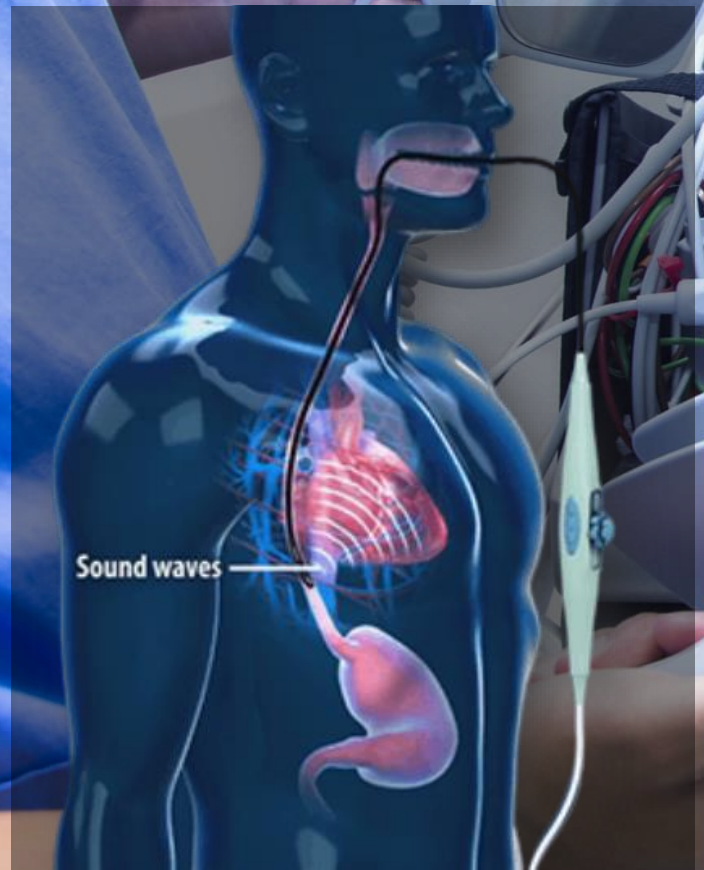
RATE CONTROL

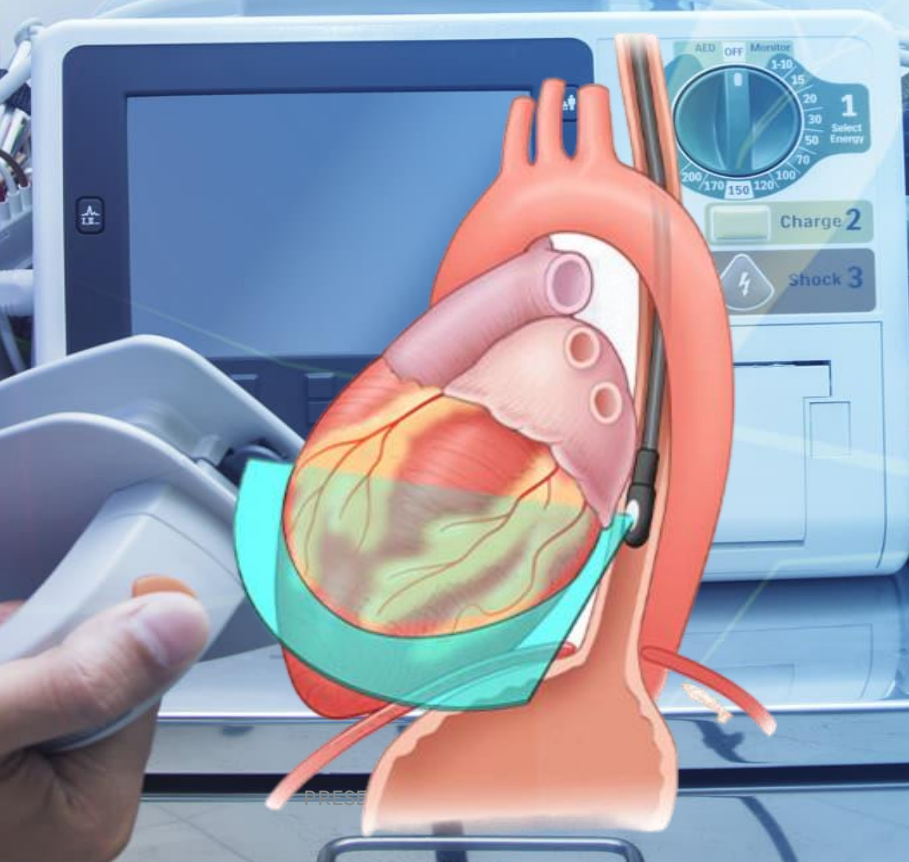
ANTICOAGULATION

RHYTHM CONTROL

RHYTHM CONTROL (CARDIOVERSION)

Transesophageal Echocardiogram (TEE)





RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

RHYTHM CONTROL (CARDIOVERSION)

Use *Pharmacological* cardioversion only if electrical cardioversion fails or is not feasible: Parenteral ibutilide, procainamide, flecainide, sotalol, and amiodarone are choices.

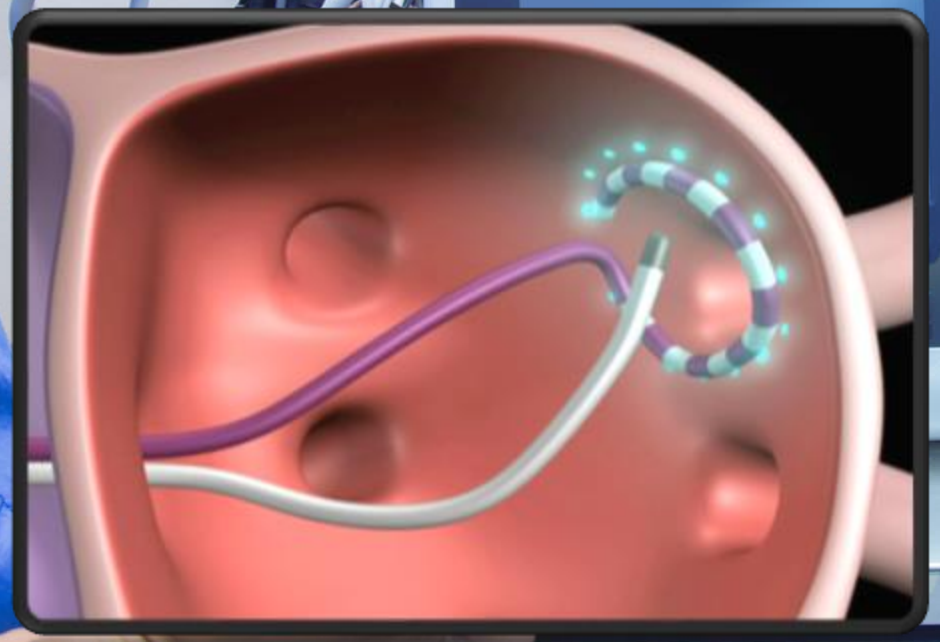
RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

RHYTHM CONTROL (CARDIOVERSION)

AFib ablation is a newer therapy for rhythm control, which is usually reserved for symptomatic patients refractory to electrical and pharmacologic cardioversion, or those with HFrEF and high AFib burden.



RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL

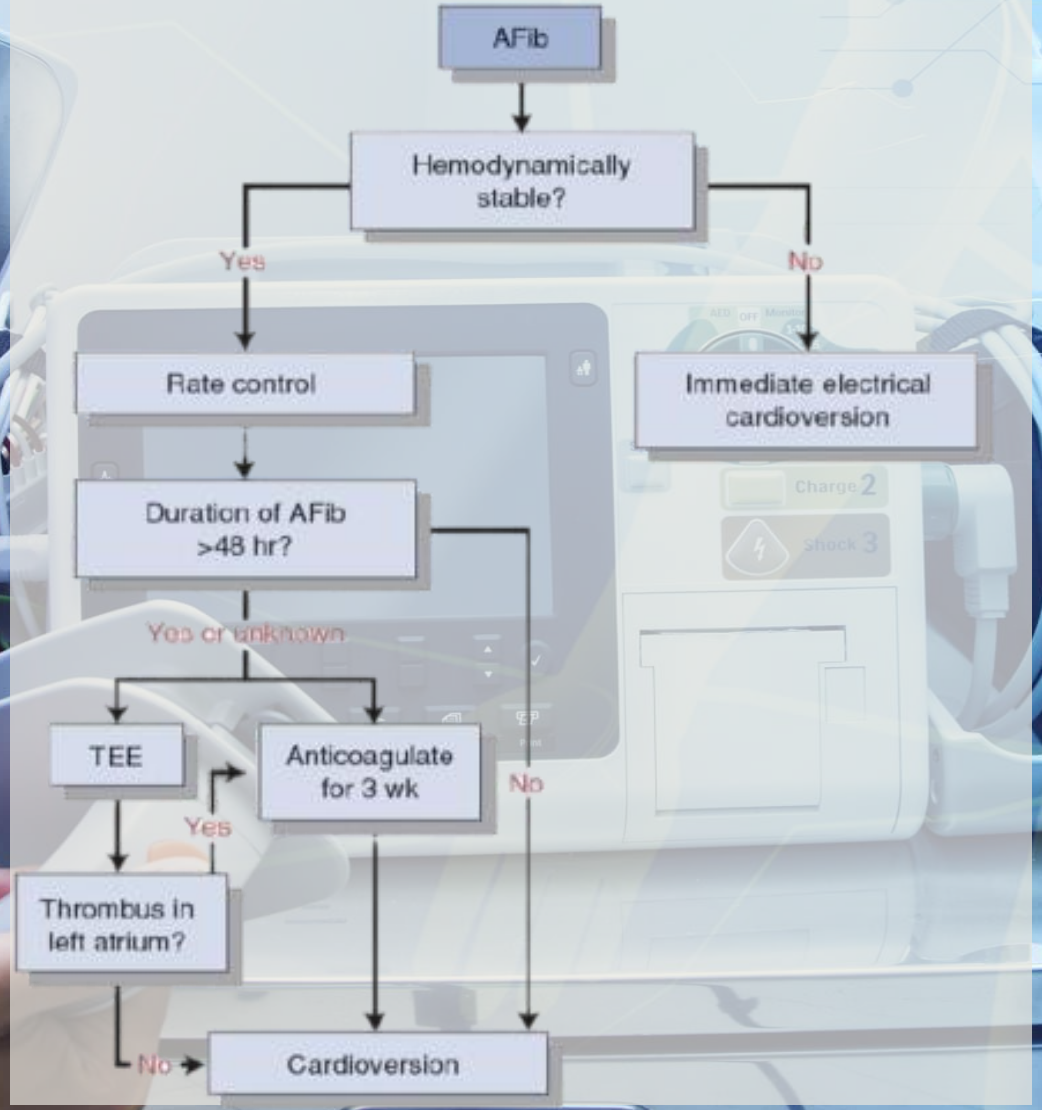
RHYTHM CONTROL (CARDIOVERSION)

The treatment of AFib and atrial flutter are similar. There are three main goals:

Rate control: Goal ventricular rate < 110

Assess need for anticoagulation

Rhythm control: Terminate the abnormal rhythm and Restore normal sinus rhythm if first presentation or symptomatic



RATE CONTROL

ANTICOAGULATION

RHYTHM CONTROL


THANK
YOU