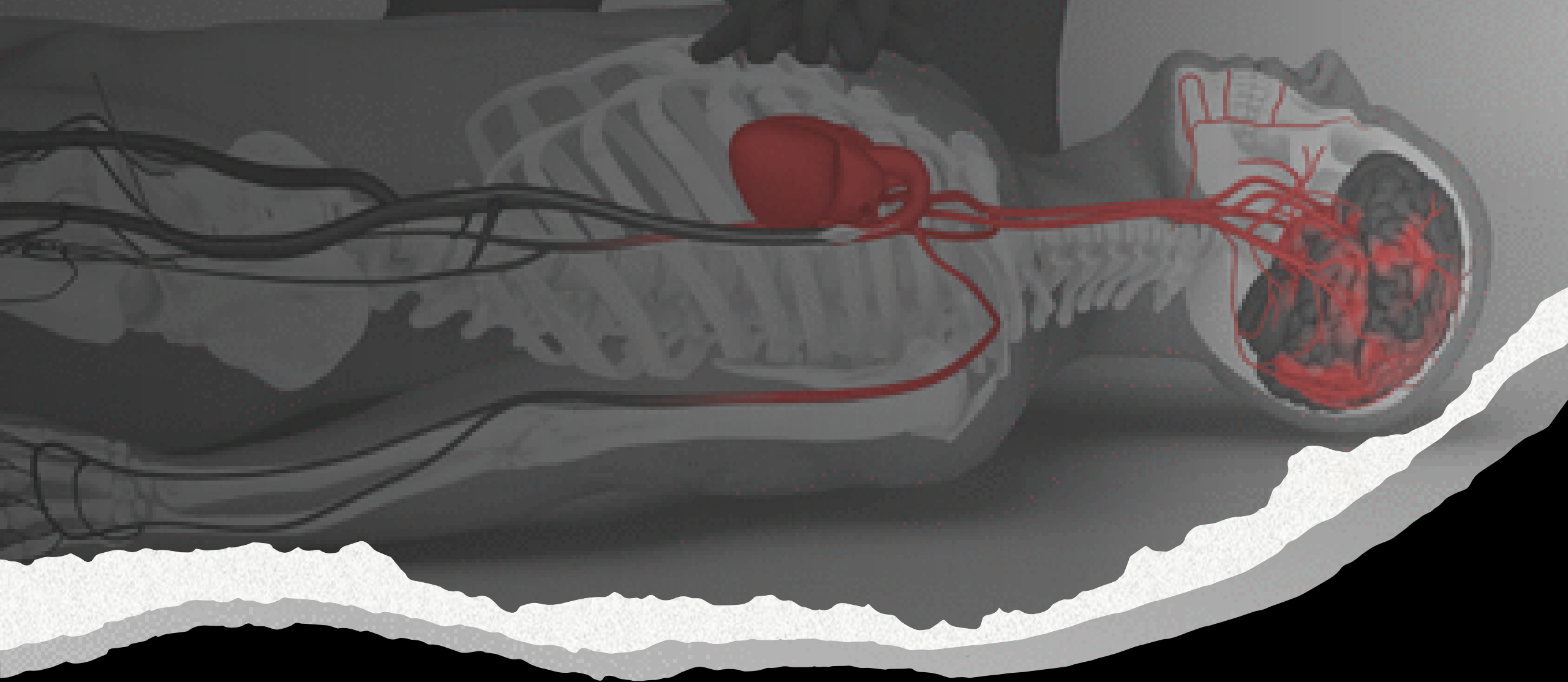




CARDIAC ARREST AND POST ARREST CARE

TYPES OF CARDIAC ARREST



TYPES OF CARDIAC ARREST

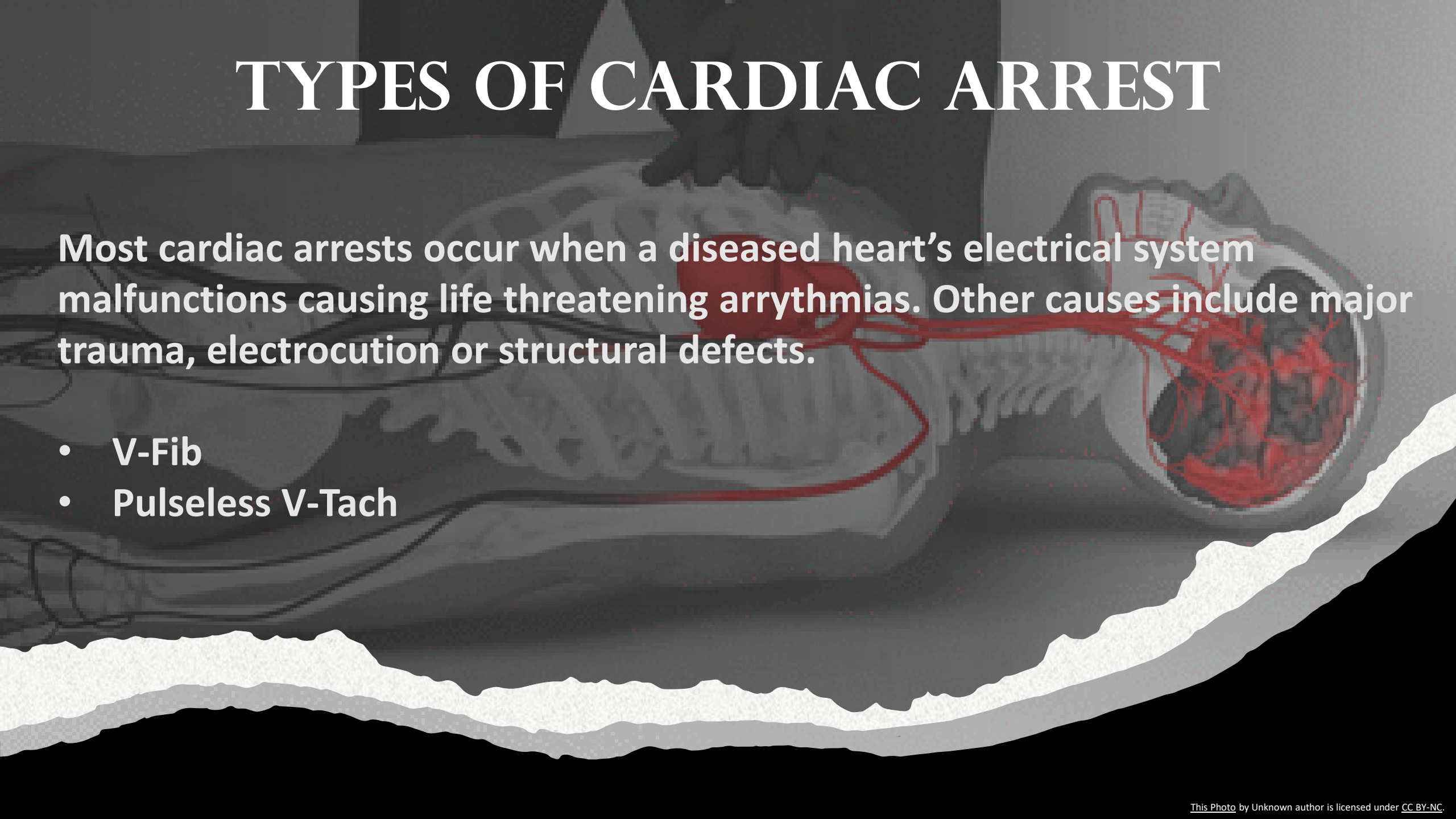
Most cardiac arrests occur when a diseased heart's electrical system malfunctions causing life threatening arrhythmias. Other causes include major trauma, electrocution or structural defects.

TYPES OF CARDIAC ARREST

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- V-Fib

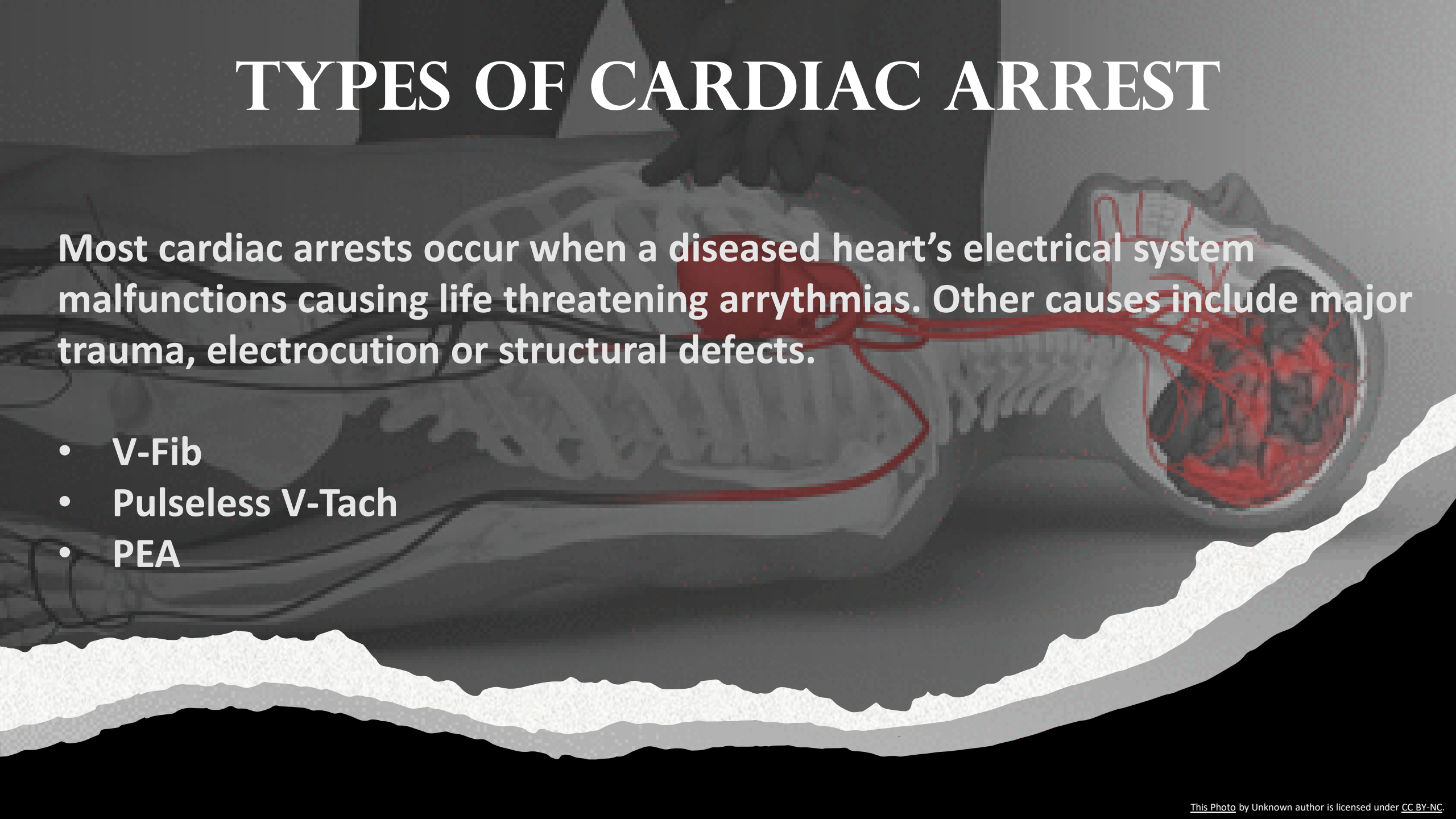
TYPES OF CARDIAC ARREST

An anatomical illustration of the human heart and lungs, showing the major blood vessels in red. The heart is centrally located, with the lungs on either side. The illustration is rendered in a dark, somewhat abstract style with a torn paper effect at the bottom.

Most cardiac arrests occur when a diseased heart's electrical system malfunctions causing life threatening arrhythmias. Other causes include major trauma, electrocution or structural defects.

- V-Fib
- Pulseless V-Tach

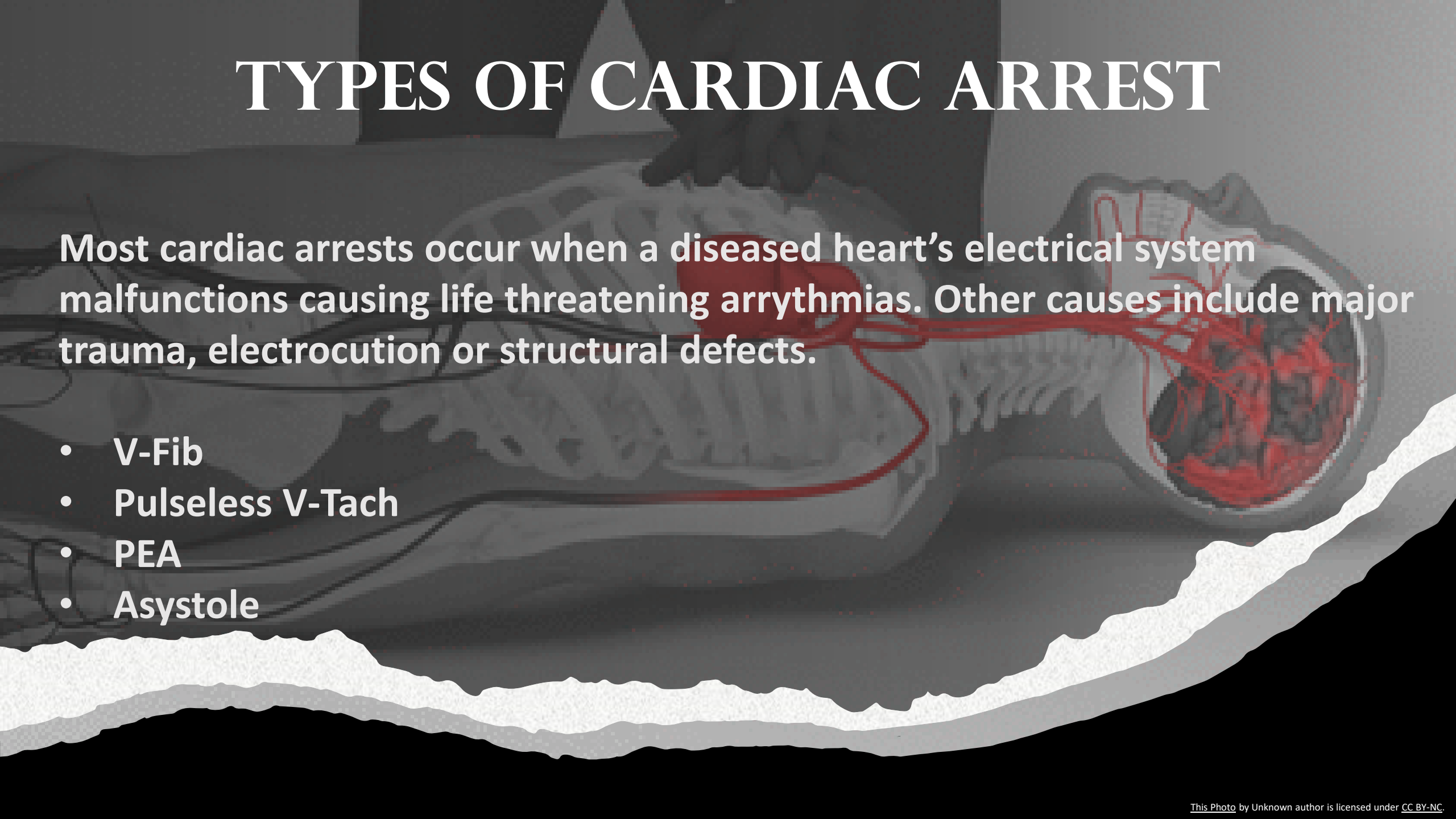
TYPES OF CARDIAC ARREST

An anatomical illustration of the human heart and lungs, rendered in a dark, monochromatic style with red highlights for the blood vessels. The heart is shown in cross-section, revealing the internal chambers and the network of arteries and veins. The lungs are positioned on either side of the heart, with their branching bronchial structures visible. The overall image has a high-contrast, almost graphic quality, with the red vessels standing out against the dark background of the organs.

Most cardiac arrests occur when a diseased heart's electrical system malfunctions causing life threatening arrhythmias. Other causes include major trauma, electrocution or structural defects.

- V-Fib
- Pulseless V-Tach
- PEA

TYPES OF CARDIAC ARREST

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Most cardiac arrests occur when a diseased heart's electrical system malfunctions causing life threatening arrhythmias. Other causes include major trauma, electrocution or structural defects.

- V-Fib
- Pulseless V-Tach
- PEA
- Asystole

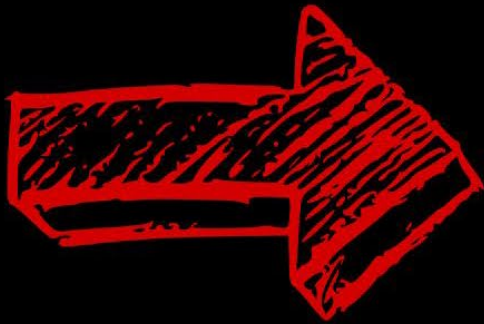
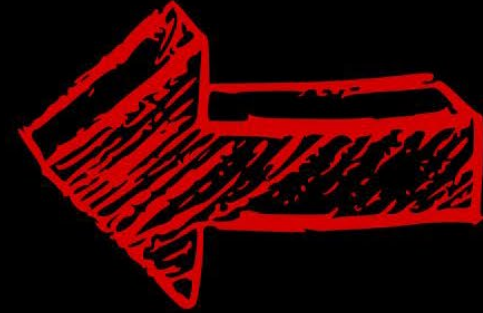
H Hypovolemia

H Hypoxia

H Hydrogen Ions (acidosis)

H Hyper or Hypokalemia

H Hypothermia



T Toxins

T Tamponade

T Tension Pneumothorax

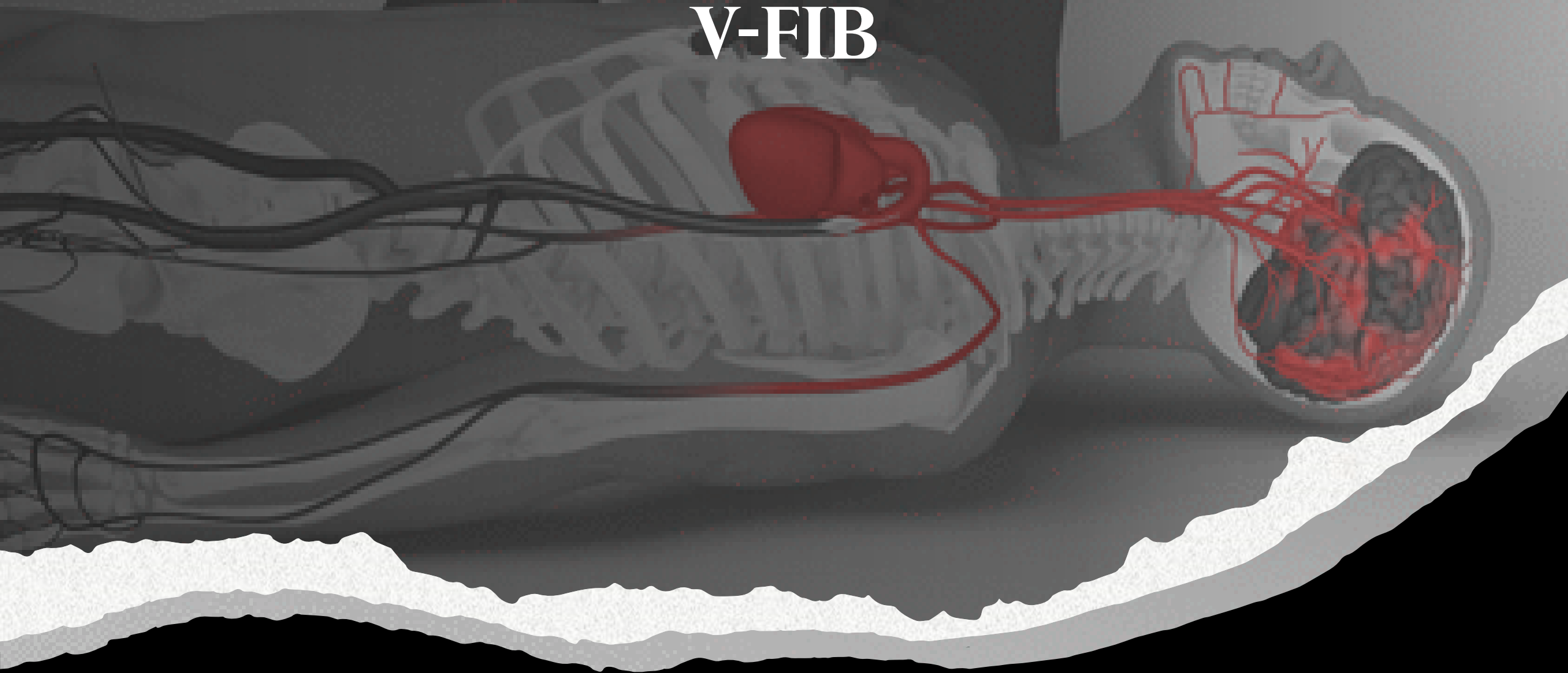
T Thrombosis (Pulmonary)

T Thrombosis (Coronary)

T Trauma

TYPES OF CARDIAC ARREST

V-FIB



TYPES OF CARDIAC ARREST

V-FIB

V-Fib is the most common fatal arrhythmia in cardiac arrest.

Occurs when the lower chambers of the heart quiver in response to erratic and unorganized electrical impulses. This results in cardiac arrest due to ineffective cardiac output.

May be coarse or fine V-Fib depending on the strength of the fibrillation.

TYPES OF CARDIAC ARREST

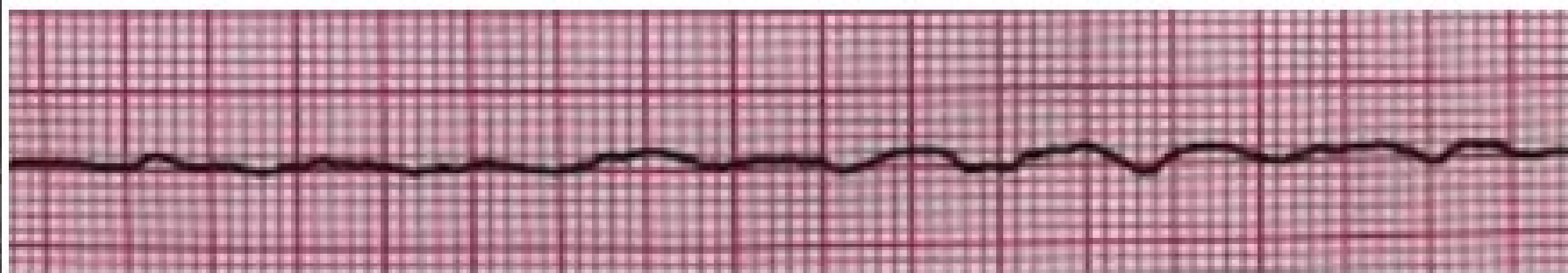
V-FIB

- Heart disease or previous heart attack
- Diseases that change the structure of the heart by making its walls thicker or weaker.
- Other arrhythmias or arrhythmia-causing conditions (WPW)
- Certain medications
- Electrolyte imbalances. Hx of missed dialysis or renal failure
- Electrocutation.
- Being hit in the chest with a small, fast-moving object known as called commotio cordis.

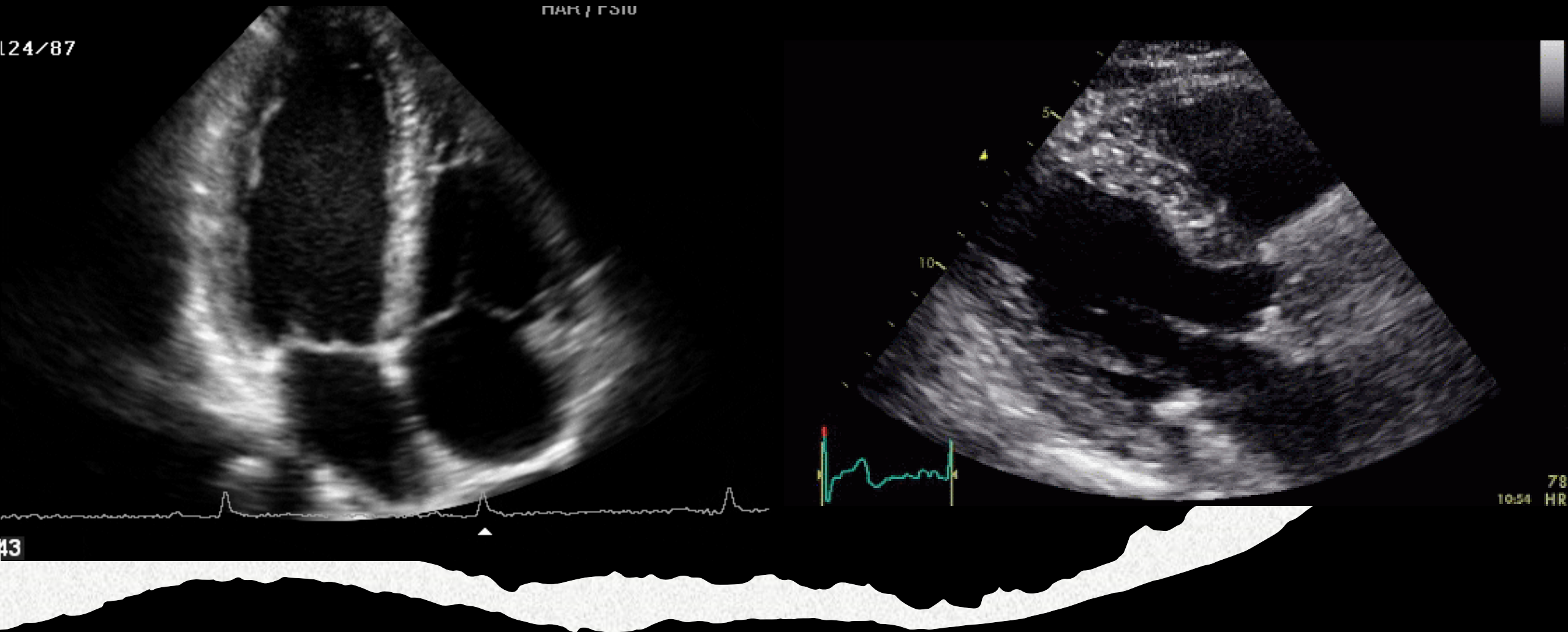
Course V-Fib



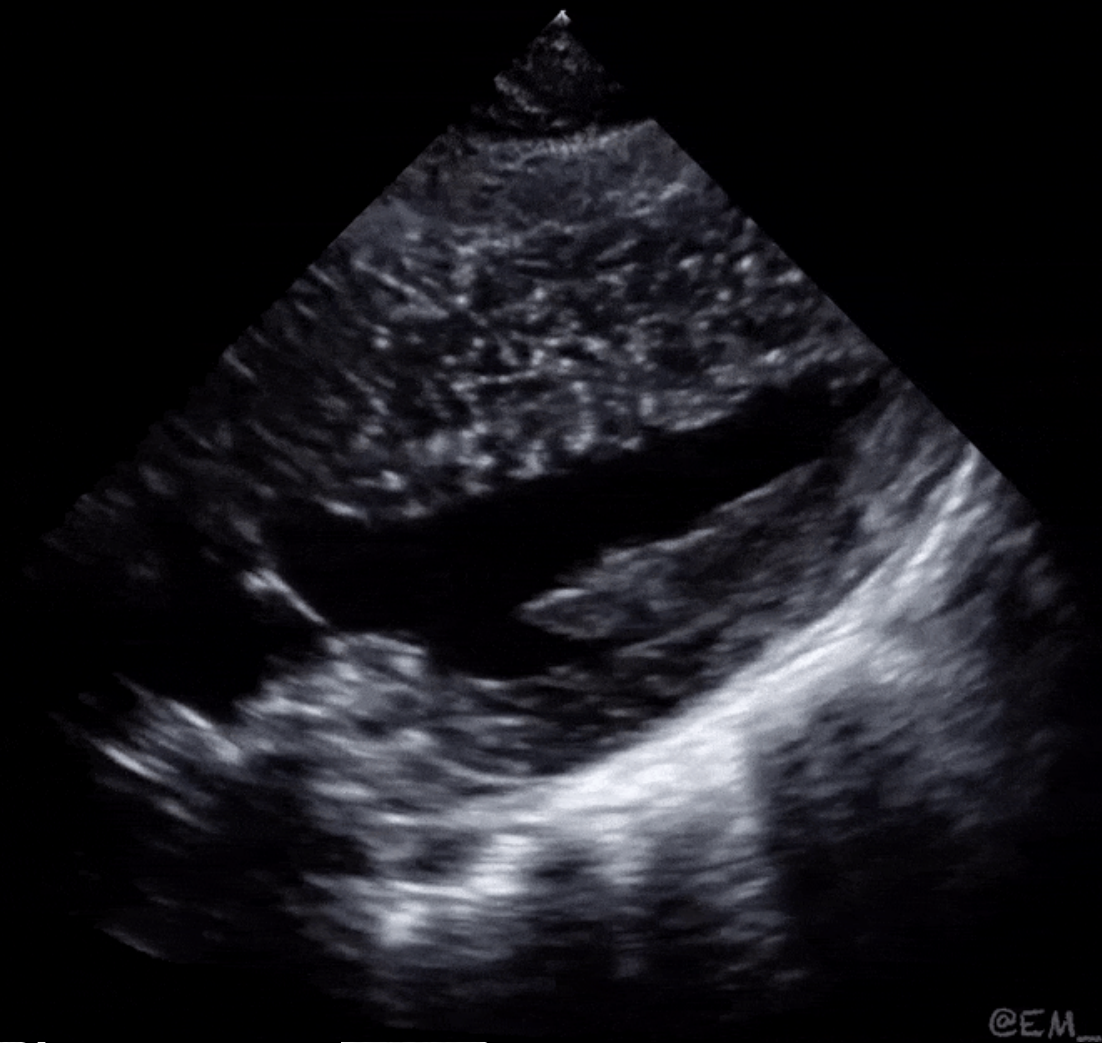
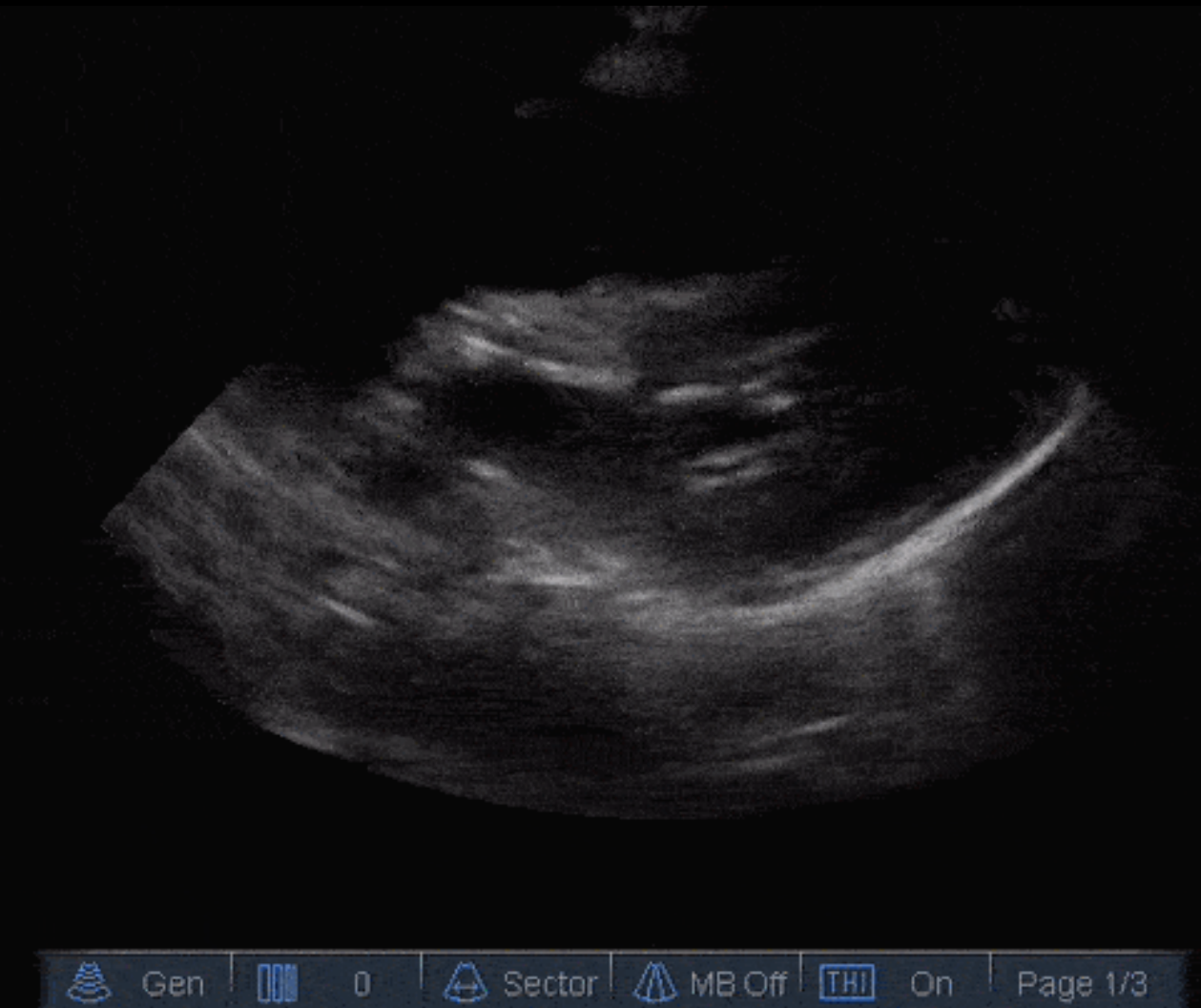
Fine V-Fib



Normal Cardiac Activity



V-Fib Arrest



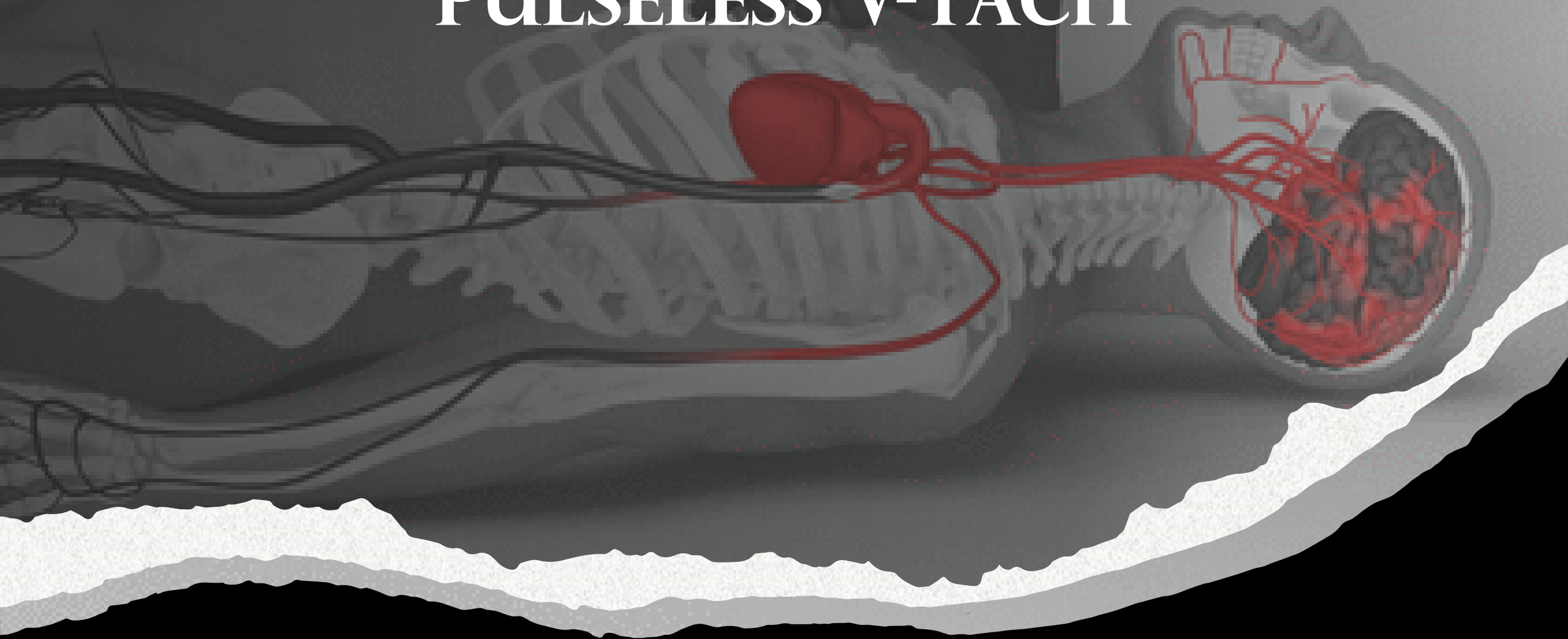
@EM_RES



Carbonaceous

TYPES OF CARDIAC ARREST

PULSELESS V-TACH



TYPES OF CARDIAC ARREST

PULSELESS V-TACH

Ventricular tachycardia or V-tach is an abnormal rhythm that occurs when the lower chambers of the heart contract too quickly to properly fill with blood resulting in decreased cardiac output and reduced organ perfusion.

This reduced CO is the reason a pulse is not palpable even with the presence of an organized electrical rhythm. Left untreated V-Tach can deteriorate into V-Fib.

TYPES OF CARDIAC ARREST

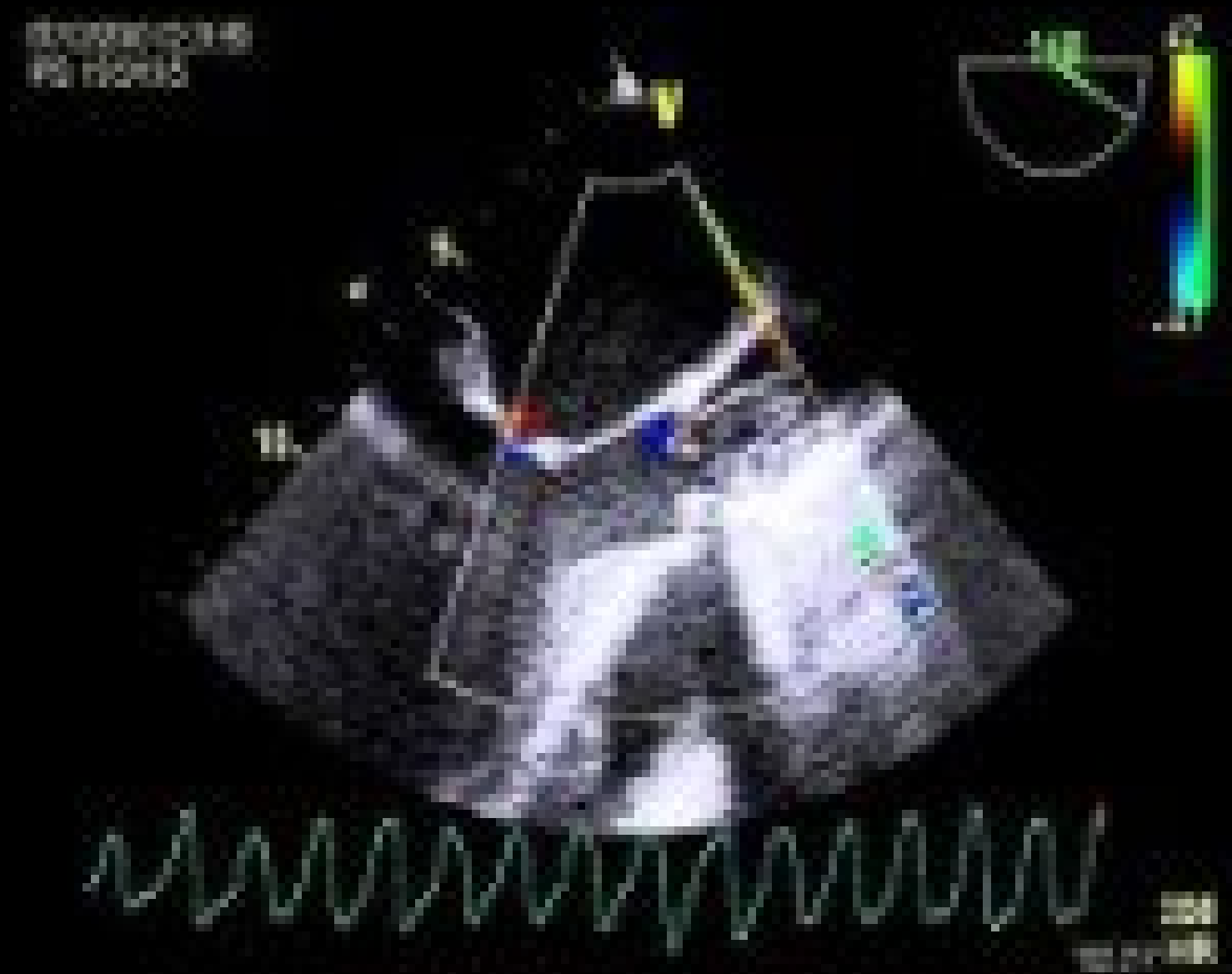
PULSELESS V-TACH

- Structural Heart Disease such as coronary artery disease, CHF, MI.
- Electrolyte Imbalances
- Electrical Disturbances (WPW, Electrocutation)
- Medications that can cause long QT interval (Antiarrhythmics, antiemetics, tricyclic antidepressants.

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TYPES OF CARDIAC ARREST

PEA

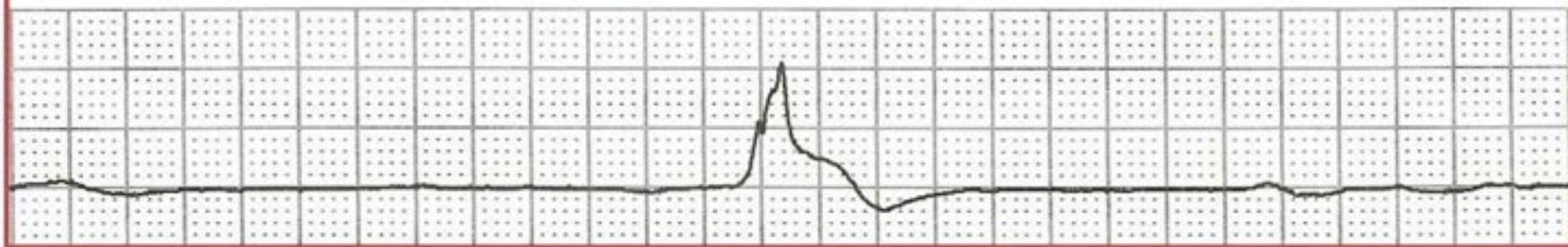
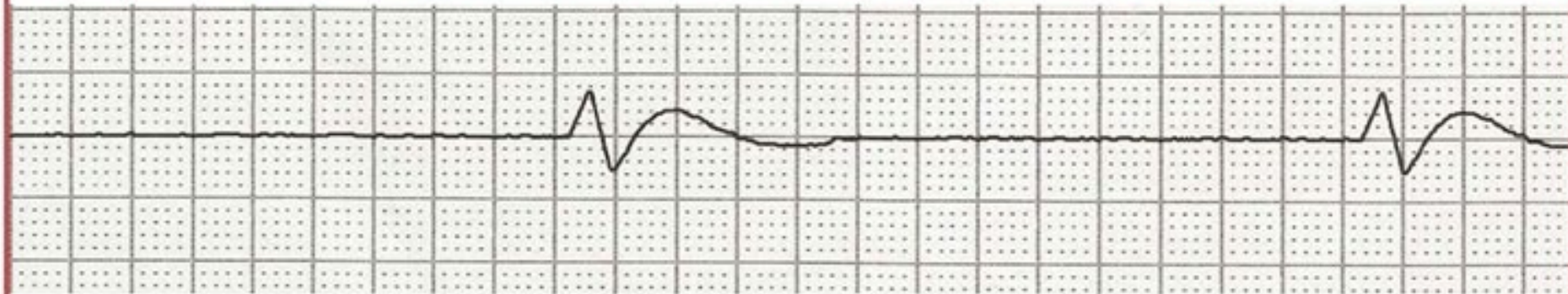
Pulseless electrical activity (PEA) is defined as the presence of any cardiac electrical activity with organized or partially organized cardiac rhythms without a palpable pulse. During PEA, the heart is unable to move adequate blood volume to maintain systemic perfusion.

TYPES OF CARDIAC ARREST

PEA

- MI
- Pulmonary embolism.
- Irregular heart rhythms (arrhythmias), especially ventricular fibrillation and ventricular tachycardia.
- Drug overdose - digitalis, tricyclics, Beta-blockers, Calcium channel blockers

Pulseless Electrical Activity



TYPES OF CARDIAC ARREST

ASYSTOLE

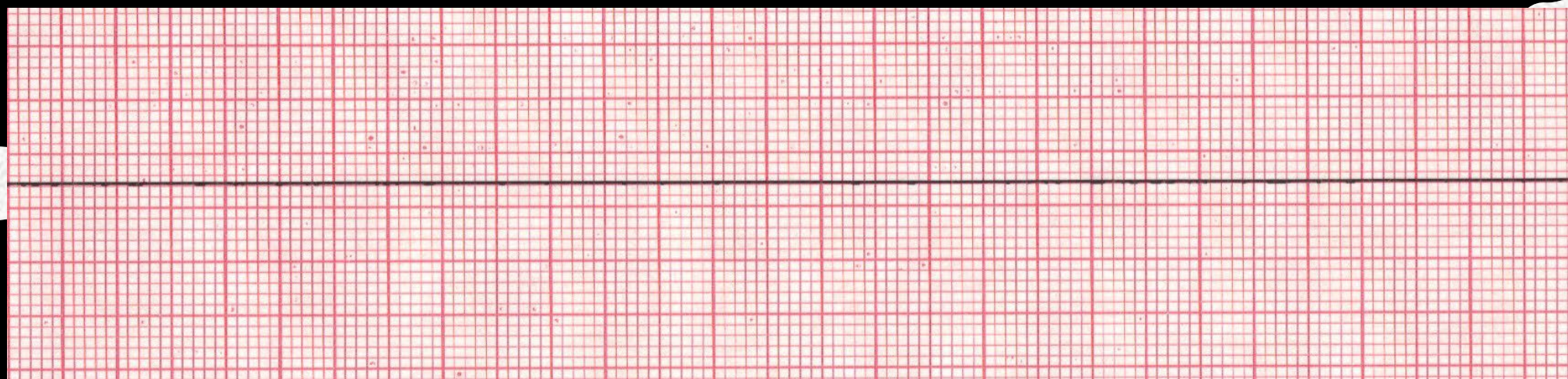
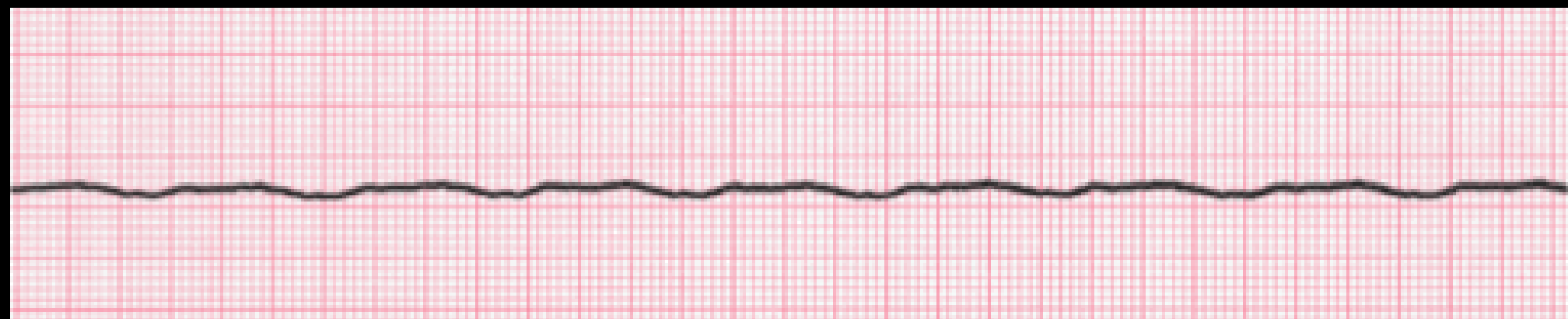
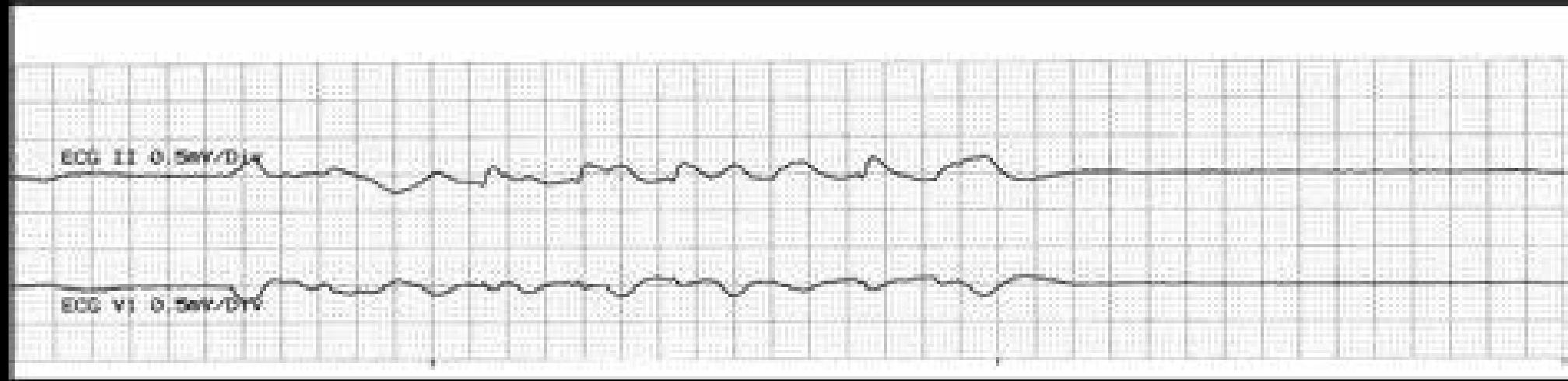
A complete failure of the electrical conduction system of the heart. No electrical or mechanical cardiac activity is present. Loss of cardiac output leads to tissue and organ hypoxia and brain death.

Always confirm true asystole by checking cables, leads and equipment before treating.

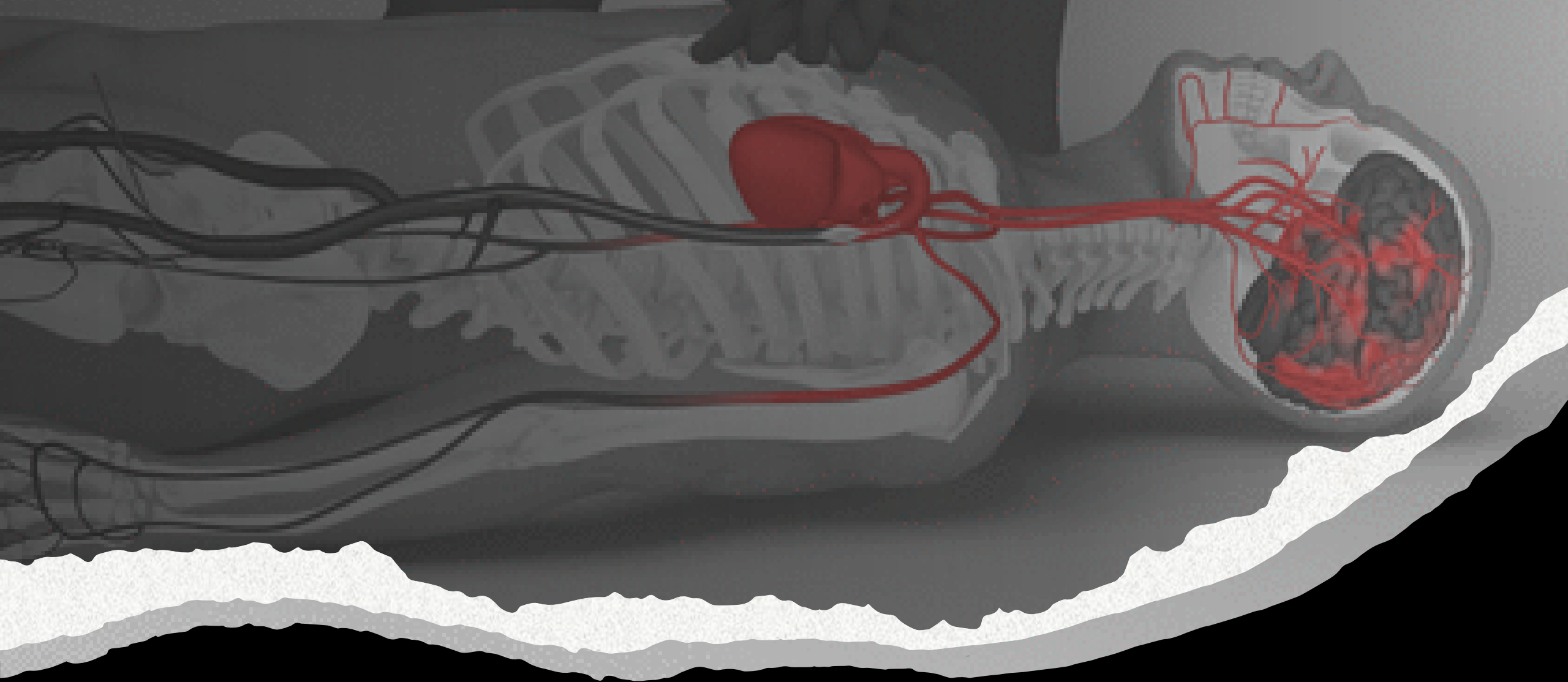
TYPES OF CARDIAC ARREST

ASYSTOLE

- MI
- Irregular heart rhythms including PEA, ventricular fibrillation and ventricular tachycardia.
- Final stage of a chronic or terminal illness.

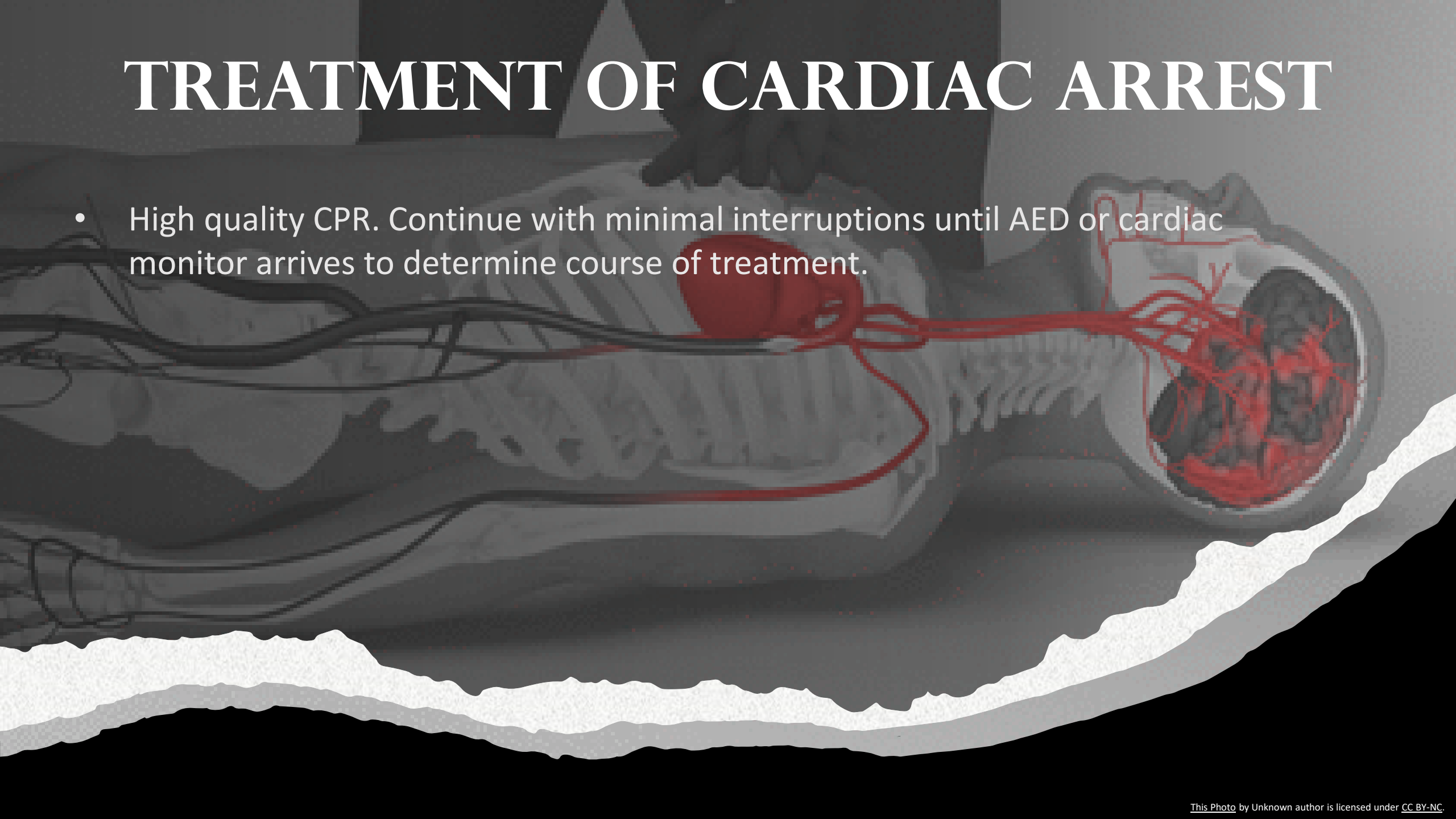


TREATMENT OF CARDIAC ARREST

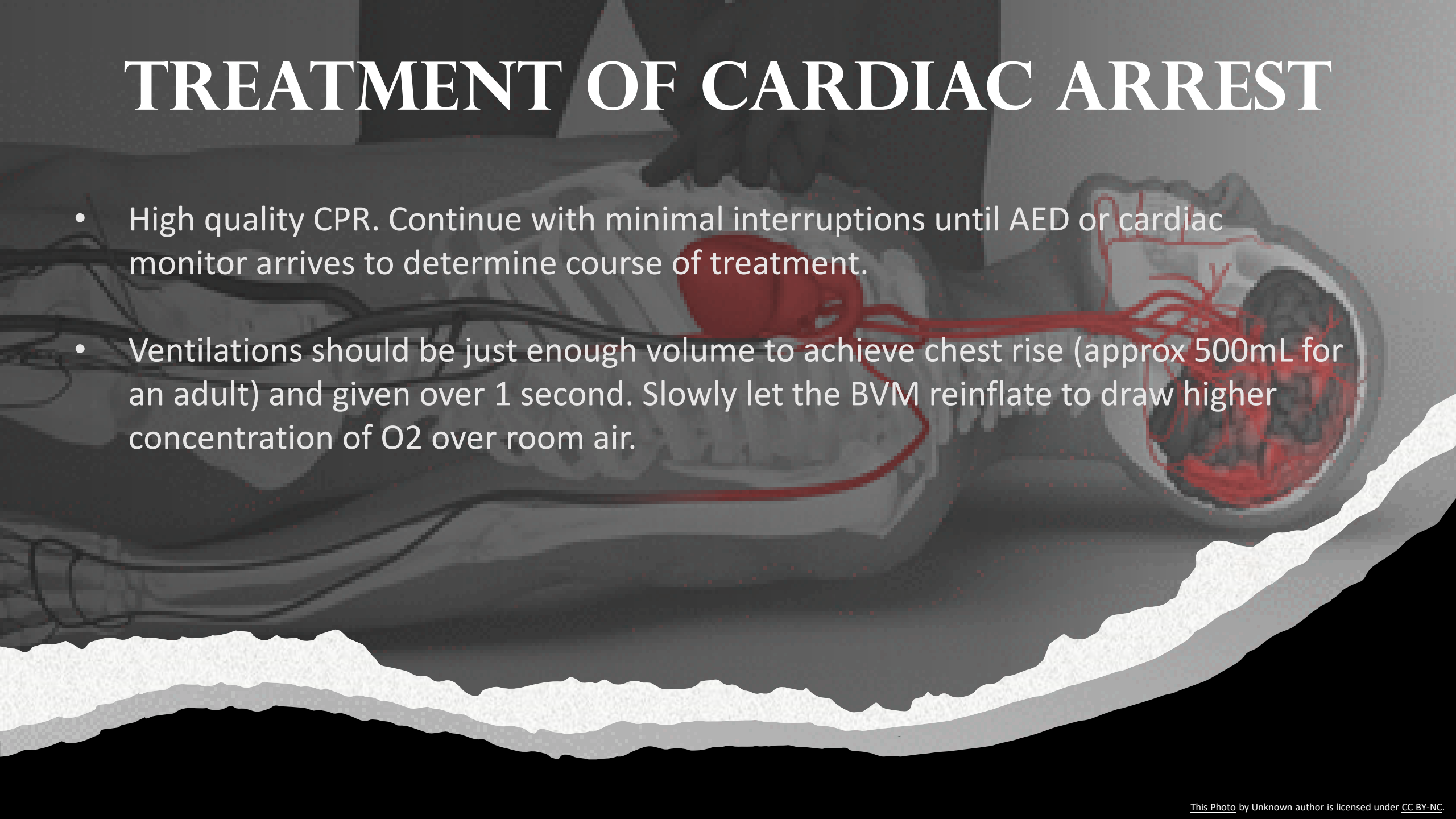


TREATMENT OF CARDIAC ARREST

- High quality CPR. Continue with minimal interruptions until AED or cardiac monitor arrives to determine course of treatment.

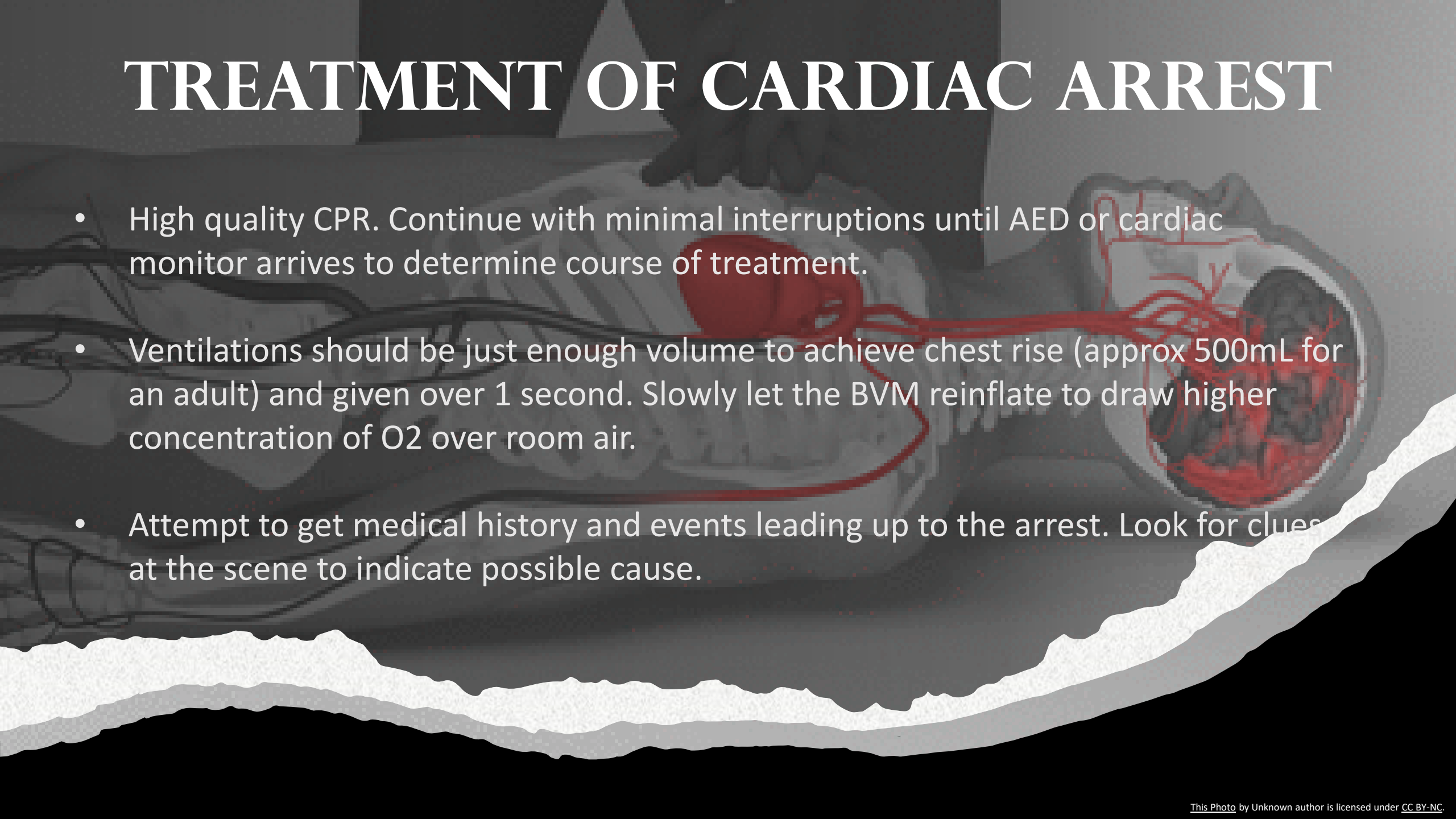


TREATMENT OF CARDIAC ARREST



- High quality CPR. Continue with minimal interruptions until AED or cardiac monitor arrives to determine course of treatment.
- Ventilations should be just enough volume to achieve chest rise (approx 500mL for an adult) and given over 1 second. Slowly let the BVM reinflate to draw higher concentration of O₂ over room air.

TREATMENT OF CARDIAC ARREST



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- Attempt to get medical history and events leading up to the arrest. Look for clues at the scene to indicate possible cause.

Air is drawn in, eliminating the vacuum required to fill the heart

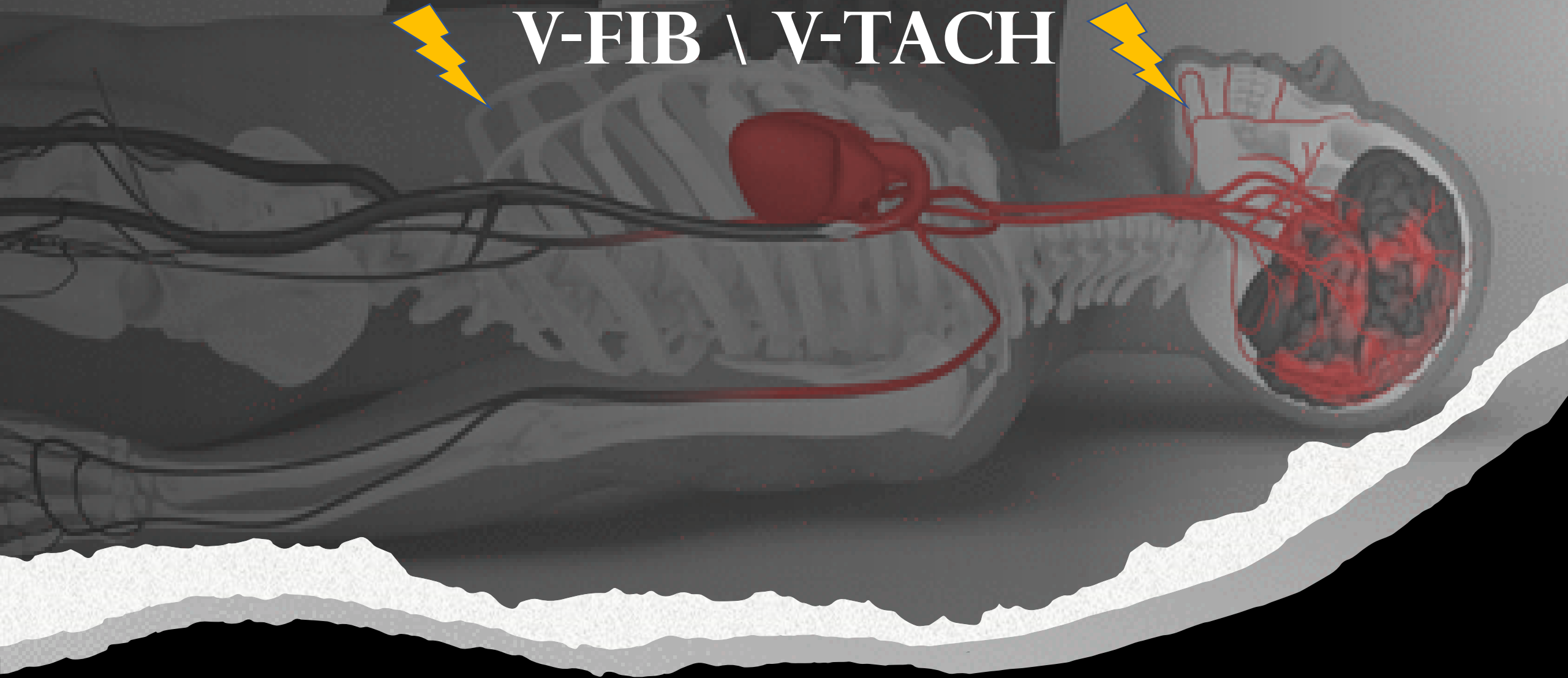




The Ts	Symptoms/Signs/Tests	Intervention	The Hs	Symptoms/Signs/Tests	Intervention
Tension Pneumothorax	Slow heart rate, narrow QRS complex, acute dyspnea, history of chest trauma	Thoracotomy, needle decompression	Hypovolemia	Rapid heart rate, narrow QRS complex,	Fluid resuscitation
			Hypoxia	Decreased heart rate	Airway management, oxygen
Tamponade (Cardiac)	Rapid heart rate and narrow QRS complex	Pericardiocentesis	Hydrogen Ion (Acidosis)	Decreased heart rate	Airway management, oxygen
			Hypoglycemia	Fingerstick glucose testing	IV Dextrose
Toxins	Variable, prolonged QT interval, neuro deficits	Antidote/antivenom (toxin-specific)	Hypokalemia	Flat T waves, pathological U wave	IV Magnesium
			Hyperkalemia	Peaked T waves, wide QRS complex	Calcium chloride, sodium bicarb, insulin/glucose, hemodialysis
Thrombosis (pulmonary)	Rapid heart rate, narrow QRS complex	Fibrinolytics, embolectomy		Hypothermia	Rewarming blankets/fluids
Thrombosis (coronary)	ST segment elevation/depression, abnormal T waves	Fibrinolytics, Percutaneous intervention			

TREATMENT OF CARDIAC ARREST

V-FIB \ V-TACH



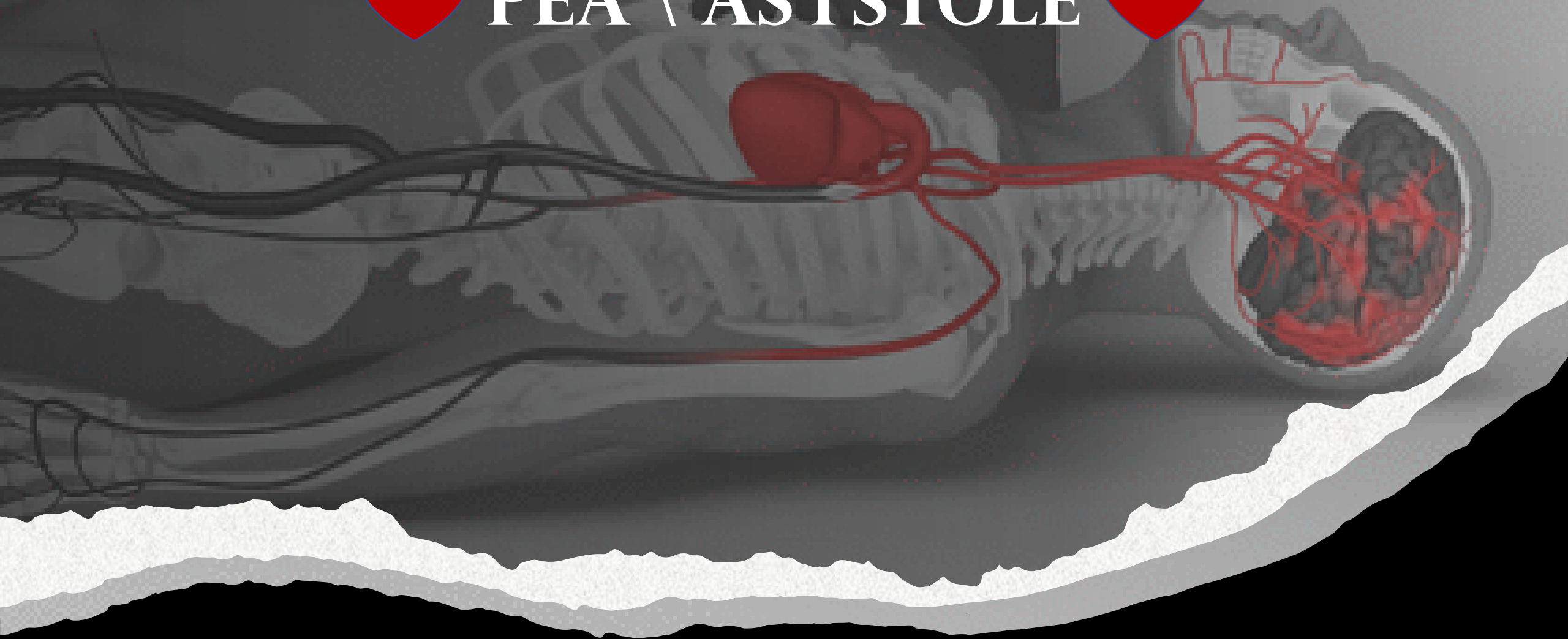
TREATMENT OF CARDIAC ARREST

V-FIB \ V-TACH

- Definitive out of hospital treatment is defibrillation.
- Resume CPR immediately following defibrillation for 2 minutes before a pulse check. Repeat until change in condition or termination of efforts.
- ALS interventions – IV, advanced airway, Epi, antiarrhythmics, mag sulfate.
- Consider reversible causes

TREATMENT OF CARDIAC ARREST

♥ PEA \ ASYSTOLE ♥



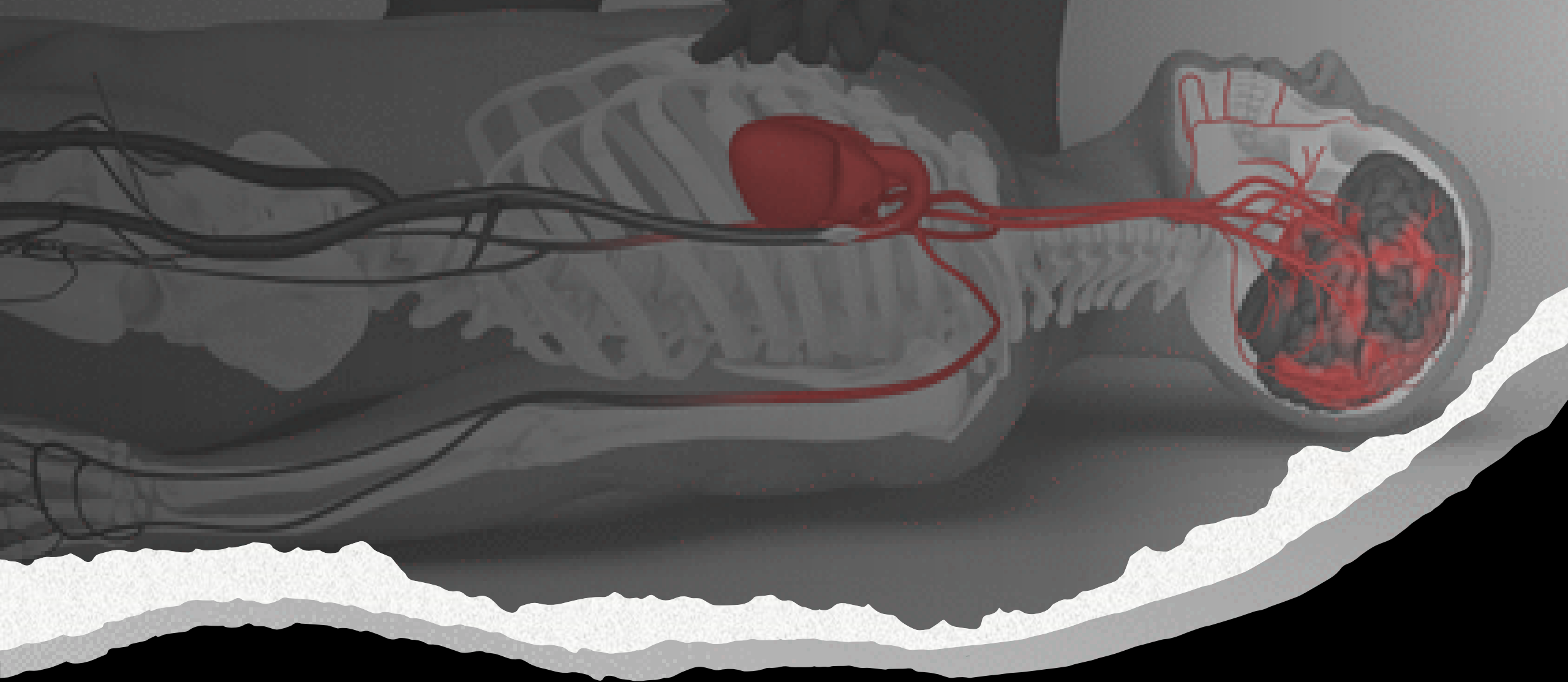
TREATMENT OF CARDIAC ARREST

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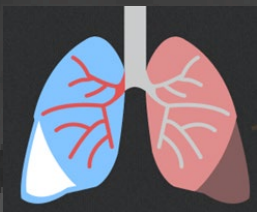
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POST ARREST CARE



POST ARREST CARE



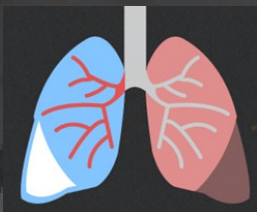
SECURE THE AIRWAY

SpO2 92%-98%

CO2 35-45

10-12 BMP

POST ARREST CARE



SECURE THE AIRWAY

SpO2 92%-98%

CO2 35-45

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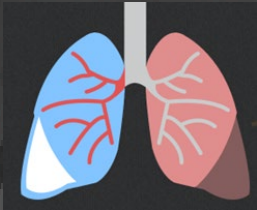


MAINTAIN BP

Systolic of >90

MAP >65

POST ARREST CARE



SECURE THE AIRWAY

SpO2 92%-98%

CO2 35-45

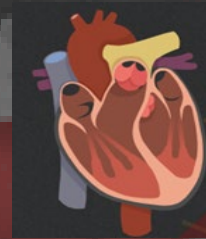
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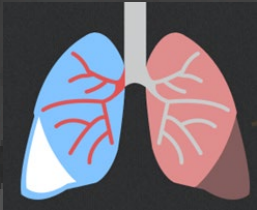
MAP >65



12-LEAD

MI – Suspect cardiac causes with no clear alternative.

POST ARREST CARE



SECURE THE AIRWAY

SpO2 92%-98%

CO2 35-45

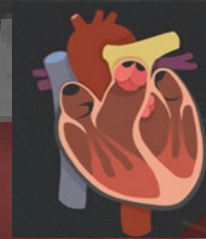
10-12 BMP



MAINTAIN BP

Systolic of >90

MAP >65



12-LEAD

MI – Suspect cardiac causes with no clear alternative.



MEDICATION SUPPORT

Fluids

Pressors

Antiarrhythmic Infusion

POST ARREST CARE

Rapid transport to the closest appropriate facility.



TERMINATION OF EFFORTS

Discontinuation of prehospital resuscitation after delivery of adequate and appropriate ALS therapy. Medical Control authorization required.

- ET CO₂ < 10 for 10 minutes of high-quality CPR
- Patient must be 18 years of age or older
- Adequate CPR has been administered
- Endotracheal intubation or other advanced airway has been successfully accomplished with adequate ventilation
- Vascular access has been achieved
- No evidence or suspicion of any of the following: Drug/toxin overdose, Active internal bleeding, Hypothermia
- Rhythm-appropriate medications and if indicated defibrillation have been administered according to protocol for a total of 3 cycles of drug therapy (epinephrine) without return of spontaneous circulation (palpable pulse)
- All Paramedic personnel involved in patient care agree that discontinuation of the resuscitation is appropriate