Atraumatic Cardiac Arrest

medications

ultrasonographer & team leader

defibrillator

airway

vascular access

compressor 1

compressor 2

family support

change compressor every 2 min

patient is unresponsive and apneic/gasping

resuscitation consistent with goals of care

activate arrest team / get defibrillator

chest compressions

rate >100/min
depth at least 2 inches or 1/3 APD
allow complete recoil
minimize interruptions

assess rhythm as soon as defibrillator is available and every 2 min thereafter

rhythm check

if VT/VF: defibrillate
continue CPR while defibrillator is charging
200 J biphasic, 360 J monophasic
resume chest compressions immediately

chest compressions 2 minutes

establish vascular access

peripheral IV
if unsuccessful, IO

if ECMO-capable center, consider establishment of ECMO access

establish supraglottic airway

8-10 breaths per minute
be mindful of tendency to overventilate

establish continuous capnography

if end-tidal CO2 is < 10
improve quality of chest compressions
And/or adjust location of compression

If abrupt, sustained end-tidal co2>10
Check for ROSC

ultrasound: TEE/TTE Subxiphoid

r/o pericardial effusion, RV failure
assess adequacy of compressions
identify "fine VF"
if sonographic contractions, pulse check

rhythm check

chest compressions 2 minutes

consider reversible causes of cardiac arrest

epinephrine 1 mg

crystalloid bolus
if suspected hypovolemia

ultrasound: TEE/TTE subxiphoid

rhythm check

packed RBCs
if suspected exsanguination

consider establishing arterial line

amiodarone
lidocaine
esmolol
dual sequential defib
stellate ganglion block

if refractory VT/VF

calcium chloride
if suspected hyperkalemia

ultrasound: IVC, lung

r/o hypovolemia, tension pneumothorax

dextrose
if suspected hypoglycemia

chest compressions 2 minutes

ultrasound: TEE/TTE subxiphoid

rhythm check

consider endotracheal intubation

chest compressions 2 minutes

ultrasound: aorta, FAST

r/o AAA, free abdominal fluid

epinephrine 1 mg
if diastolic BP is <20 mmHg

if no arterial line, may empirically repeat epinephrine q3-5 min

sodium bicarbonate
if suspected primary acidosis or susceptible toxin

thrombolysis
if suspected pulmonary embolism
Or
myocardial infarction

ultrasound: TEE/TTE subxiphoid

rhythm check

chest compressions 2 minutes

specific antidotes
digoxin immune Fab
hydroxocobalamin
lipid emulsion
atropine
antivenom

ultrasound: lower extremities

r/o DVT

epinephrine 1 mg
if diastolic BP < 20
And/or
CPP <20

ultrasound:TEE/TTE subxiphoid

rhythm check

ROSC

No ROSC

cardiac standstill
end-tidal CO2 < 10

terminate resuscitation

post arrest care

fluids and vasopressors to MAP >65
tidal volume 6-8 ml/kg IBW, oxygenation to SpO2 94%, ventilation to PaCO2 40 mm Hg
if not following commands: cool to 32-37.5°C, starting with 30 cc/kg cold NS
if suspicious for AMI: coronary artery reperfusion, dobutamine if poor EF
consider CT brain to r/o intracranial cause of arrest and EEG to r/o seizures
monitor lactate, K, urine output; target serum glucose 144-180 mg/dL

Abbreviations: AAA, abdominal aortic aneurysm; AMI, acute myocardial infarction; APD, anterior-posterior chest depth; BP, blood pressure; CPP, coronary perfusion pressure; CPR, cardiopulmonary resuscitation; CT, computed tomography; DVT, deep venous thrombosis; EEG, electroencephalogram; EF, ejection fraction; FAST, focused assessment with sonography in trauma; IBW, ideal body weight; IO, intraosseous; IV, intravenous; IVC, inferior vena cava; MAP, mean arterial pressure; NS, normal saline; r/o, rule out; RBCs, red blood cells; ROSC, return of spontaneous circulation; TEE, transesophageal echo; TTE, transthoracic echo, VF, ventricular fibrillation; VT, ventricular tachycardia.

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