EM Cases Course 2017
Mastering the Cardiac Arrest

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Podcasts to listen to prior to the course

Link to: ACLS Guidelines 2015 – Cardiac Arrest Controversies Part 1
Link to: ACLS Guidelines 2015 – Post-Arrest Care
Link to: Critical Care Controversies
Link to: ALPS trial: Amio vs Lidocaine

The management and aftercare of the adult cardiac arrest patient remains one of the most adrenaline-inducing and logistically challenging scenarios that Emergency Physicians face. A lot has changed over the years when it comes to managing the adult in cardiac arrest. As a result, survival rates after cardiac arrest have risen steadily over the last decade. The most recent widespread changes came with the release of the American Heart Association ACLS Guidelines 2015. In this module, Dr. Chenkin and Dr. Hicks will guide you deeper into the controversies and subtleties of optimally managing the arresting adult; they will explore the incorporation and utilization of Crisis Resource Management, ultrasound, end-tidal CO2, and feedback mechanisms to improve resuscitative efforts.

Case 1: PEA Arrest

A 48y/o obese woman, with factor V Leiden, 6-weeks post-partum was found down and pulseless by EMS in the parking lot of your hospital. Immediately before collapsing, she complained to her husband, who witnessed the episode, that she had sudden onset chest pain and SOB. The husband immediately phoned 911 and EMS arrived within 5 minutes. You are the ED physician covering Resus as you receive notification of the patient en route, and as she and the EMS team roll into your resuscitation bay, CPR ongoing.

Q1: How will you prepare your team in the 5 minutes you have before the patient arrives?

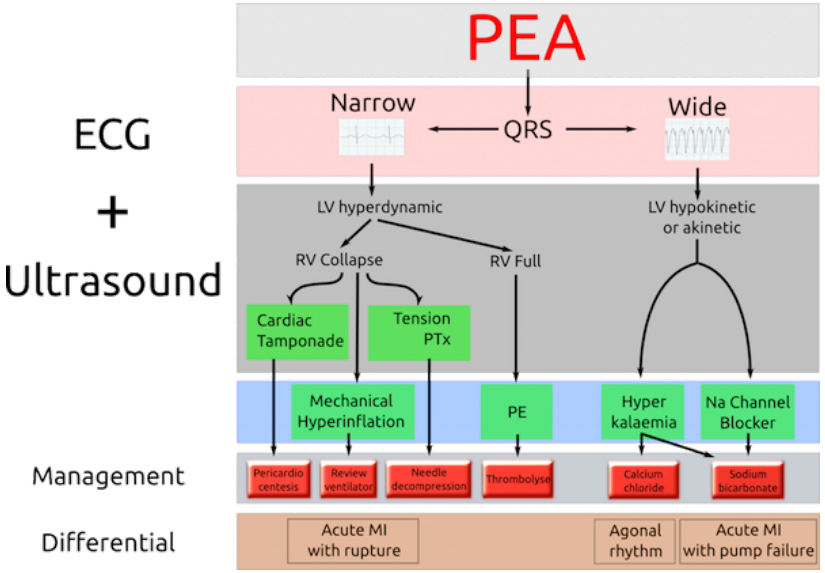
Q2: How will you minimize chest compression interruptions?

Q3: How will you know that you are achieving the best chest compression rate of 100-120/min and the recommended chest compression depth of 5-6cm?

Case continued

Your team is performing, ongoing high-quality CPR. EMS informs you that the patient has never been in a shockable rhythm. At the first rhythm check, you identify PEA.

Q4: How do you approach PEA?



From Adelaide Emergency Physicians Education Resource
Image Link: https://emergencymedicinecases.com/wp-content/uploads/2015/10/littman_pea_algorithm-1024x711.png

This new way of thinking about PEA combines initial ECG morphology with the clinical scenario to guide the clinician to the most likely causes, and offer further diagnostic certainty using point of care ultrasound (POCUS). The first key step is to distinguish between narrow complex and wide complex PEA, with POCUS being used to help differentiate the causes of narrow complex PEA in particular.

Case continued

During ongoing resuscitative efforts, your resident managing the airway successfully intubates the patient.

Q5: How will you use end-tidal CO2 to help you finesse your resuscitation for 1. Chest compression quality 2. Confirmation of tracheal intubation 3. Determination of ROSC?

Q6: How can you use POCUS to confirm tube placement and help “call a code”?

Q7: How can you optimize epinephrine during cardiac arrest?

References

Littmann L, Bustin DJ, Haley MW. A simplified and structured teaching tool for the evaluation and management of pulseless electrical activity. Med Princ Pract. 2014;23(1):1-6.

Eckstein M, Hatch L, Malleck J, Mcclung C, Henderson SO. End-tidal CO2 as a predictor of survival in out-of-hospital cardiac arrest. Prehosp Disaster Med. 2011;26(3):148-50.

Case 2: Refractory VT

A 55y/o male experiences chest pain and collapses; quick arrival of EMS and countershock in the field yields no ROSC. EMS and the patient arrive in your ED with CPR in progress. When you see the patient, three 200J defibrillations, three 1mg epi doses, and 300mg amiodarone have already been given. The total arrest time is 10 minutes.

Q1: How would you prepare your team?

Q2: How can you minimize interruptions to chest compressions?

Q3: Would you continue with defibrillation? And if so, at the current set-up/dose?

Q4: Would you continue to administer IV epinephrine q3-5 mins if the patient remained pulseless?

Q5: Are there any other medications that may be beneficial in this circumstance?

Q6: Are there any mechanical supports that can be considered if the above interventions fail?

References

Bardy GH, Ivey TD, Allen MD, Johnson G, Greene HL. Prospective comparison of sequential pulse and single pulse defibrillation with use of two different clinically available systems. J Am Coll Cardiol. 1989;14(1):165-71.

Kudenchuk PJ, Brown SP, Daya M, et al. Amiodarone, Lidocaine, or Placebo in Out-of-Hospital Cardiac Arrest. N Engl J Med. 2016;374(18):1711-22. Abstract

Lee YH, Lee KJ, Min YH, et al. Refractory ventricular fibrillation treated with esmolol. Resuscitation. 2016;107:150-5.