

Location: Emergency room

Vital signs: B.P 80/40 mm Hg; P.R: 130/min; R.R: 30/min

C.C: Chest pain from a severe motor vehicle accident (MVA).

HPI:

A 61 year old man involved in a motor vehicle accident (MVA), brought to the ER immediately. He complains of severe chest pain, 10/10, and non radiating. He also C/O shortness of breath. Chest wall impacted the steering wheel. No other history is available. How do you approach this patient?

Order:

IV access
Pulse oxy, stat
Oxygen, inhalation
Order general, lungs, and heart exam

Results:

Patient is in severe chest pain, his extremities are turning blue. Lungs are CTA B/L. There is a 15 cm JVD. S1, S2 muffled. No murmurs heard.
Pulse oxy shows 88% on room air.

Order review:

IV NS bolus, and continue at 150 cc/hr
Elevate the patient legs
Continuous cardiac monitoring
Pericardiocentesis, stat

Results:

Patient started improving
His BP came upto 100/60 mm HG
HR decreased to 90/min

Order review:

Stat EKG, 12 lead
Chest -X ray, portable
Transthoracic Echocardiogram (TTE), stat
Pericardial fluid for cell count, stat
ABG, stat
CVTS (Cardiovascular thoracic surgeon) consult, stat

Results:

12 lead EKG shows sinus tachycardia, low-voltage QRS complexes, and electrical alternans.
CXR showed globular heart with air fluid level in pericardial cavity.
TTE - Revealed fluid in the pericardial cavity. Impression: Cardiac tamponade

If the CVTS doesn't want to operate, then the patient management will be as follows:

Shift the patient to ICU
Continue continuous cardiac monitoring
Swan-Ganz catheter, stat
Diet - NPO
Complete bed rest
Place a Foley catheter
Urine output Q 2 hours
Pneumatic compressions of the legs
CBC with diff, stat
Basic metabolic panel, stat

PT/aPTT, stat
Continue NS @ 150 cc/hr
Gastric prophylaxis - Omeprazole (20mg) orally, once daily
Type and screen for 2 units of blood
Acetaminophen + codeine for pain, continuous (actually as needed in real life)

Note: Transfuse blood if the Hb is less than 8 in a patient with no active bleeding, less than 10 in actively bleeding patient. Each unit of blood will increase the Hb approximately 1 gm%.

Next day:

D/C Foley catheter
Repeat TTE
Repeat Chest -X-ray

Note: If you do this much, your case will end in the exam. Further management is complicated, it is based on the patient condition, CVTS recommendations, etc.

Explanation:

Cardiac tamponade is a life threatening condition and should be diagnosed and treated emergently. The diagnosis of tamponade is primarily clinical. Myocardial rupture in patients with trauma usually manifests itself as cardiac tamponade. The classic description of cardiac tamponade is Beck's triad: Hypotension (100%), distended neck veins, and muffled heart sounds. The other useful findings are tachycardia, elevated central venous pressure, pulsus paradoxus, and cyanosis of the head, neck, arms, and upper chest. Tamponade should be suspected in any patient with chest injury whose hypotension do not respond to fluids or out of proportion to the apparent blood loss.

Differential diagnosis in patients with trauma should include tension pneumothorax (decreased breath sounds, deviated trachea, hyperresonance to percussion), right ventricle contusion/failure, superior vena cava obstruction, ruptured tricuspid valve, and aortic dissection. Pulmonary embolism, pericarditis, and cardiogenic shock should be considered in patients without trauma.

Emergency pericardiocentesis is a potentially life-saving procedure performed in the ED. Emergent thoracotomy is indicated when the patient does not respond to pericardiocentesis and has rapidly deteriorating vital signs or cardiac arrest. After pericardiocentesis, intrapericardial catheter is left in place and attach it to a closed drainage system. Drain should be checked regularly for reaccumulation of fluid. Pericardial fluid should be sent for cell count initially and periodically (Q 24 hours) to diagnose an impending bacterial catheter infection, which could be catastrophic. If the WBC count rises significantly, the pericardial catheter must be removed immediately. A Swan-Ganz catheter is very useful to monitor the central venous pressure and it can be left in place for continuous monitoring and to assess the effect of reaccumulation of pericardial fluid. Patients should have a repeat echocardiogram and chest x-ray within 24 hours.

Primary Diagnosis:

Pericardial Tamponade

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