Pericardial Diseases and Tamponade

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Echo Hawaii 2016
January 22nd, 2016

Pericardial Diseases
- Tamponade/effusion
- Tumor
- Trauma
- Perforation
- Endocarditis/Infection
- Aortic Dissection
- Effusive CP

Effusion
Hemopericardium
Pericarditis
Apex widening

Case #1 74-year-old man with chest pain for several days

- Normal LV
- Small pericardial effusion
- Ibuprofen and Colchicine

Colchicine for Acute Pericarditis
Freedom from Incessant or Recurrent Pericarditis

<table>
<thead>
<tr>
<th>No. at risk</th>
<th>Months</th>
<th>Probability of event-free survival</th>
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<tbody>
<tr>
<td>Colchicine</td>
<td>120</td>
<td>100-16.7 %</td>
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<tr>
<td>Placebo</td>
<td>120</td>
<td>100-37.5 %</td>
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Colchicine (COPE Trial) for 3 months 0.6 mg twice a day (Circulation Sep 2005) vs 32% Recurrence rate

Colchicine

Acute Pericarditis
Management Recommendation

- Nonsteroidal anti-inflammatory (NSAID) agent for 1 month: ASA (1.5-2 gr/d), Ibuprofen (2.5-3 gr/d), Indocin (25-50 mg tid or qid)
- Colchicine (COPE Trial) for 3 months 0.6 mg twice a day (Circulation Sep 2005) vs 32% Recurrence rate
- Avoid steroid if possible
- Avoid vigorous exercise for 1-2 months
Persistent pain and not feeling well
Atrial fibrillation and hypotension

1 = Rate control  2 = Steroid  3 = Pericardiocentesis  4 = More imaging

What do you do now?
• 1. Steroid Therapy
• 2. TEE
• 3. CT
• 4. Surgery

Intraoperative TEE

Pericardial Effusion – Etiologies
• Potentially catastrophic violation of closed pericardial space – acute infarction, aortic dissection, catheter manipulation, cardiac operation, endocarditis – BLOOD COAGULUM?
• Neoplastic – fixed mass involving pericardium?
• Inflammation – infectious, autoimmune, radiation
• Metabolic – hypothyroid, renal failure
• Hemodynamic – CHF, hypoproteinemia

Pericardial Effusion – Aortic Dissection

Cardiac Tamponade
• Clinical syndrome of hypotension, tachycardia, and symptoms, occurring when intrapericardial pressure exceeds intracardiac pressure

• Slowly developing effusions – pericardium stretches; tamponade occurs with larger volume

• Rapidly developing effusion – pericardium has no time to stretch; tamponade occurs with small volume
Tamponade

Diastolic RV Compression – P.L.A.

Tamponade – Diastolic RV Collapse

Tamponade Pathophysiology

Similar to Constriction

Cardiac Tamponade

Cardiac Tamponade

Pulsus Paradoxus
Case #2
57 year old male with STEMI
Thrombolysis and Stent
Hypotensive and tachycardic

1. Dopamine
2. IABP
3. Fluid
4. Surgery

Case #3
47 year old man with RA
Increasing dyspnea and weight loss

- Cachectic
- JVP is increased
- Decreased breath sounds
- Normal S1 and S2
- No peripheral edema

47 year old man with dyspnea

Hepatic Vein Doppler
Expiratory Diastolic Flow Reversal

Plethoric IVC
47 year old man with tamponade
Small cell cancer

Case #4
66 year old woman with dyspnea

- 2010 : Nissen fundoplication for Reflux
- 2012 : Gastric perforation, repaired
- June 2015 : Pneumothorax
- Oct 2015 : Dyspnea and chest pain
  - Blood culture positive GP cocci
  - Atrial fib with RVR
  - Echocardiography obtained

66 year old woman with dyspnea
Gastro-pericardial fistula

Case #5
24 year old female with fatigue and dyspnea
Pleural and pericardial effusion

24 year old female with fatigue and dyspnea
Pleural and pericardial effusion

MSSA Endocarditis in an IV drug addict
Case # 6
77 yo man with severe aortic stenosis
TAVR and PM implantation

77 yo man with severe aortic stenosis
TAVR and PM implantation & RV Perforation
Pericardiocentesis yielded 125 cc of bloody fluid

77 yo man with severe aortic stenosis
Increasing dyspnea 2 months after pericardiocentesis

Effusive-Constrictive Pericarditis
Interventricular Dependence
Expiratory diastolic flow reversal

77 yo man with effusive constrictive pericarditis
Cardiac MRI with Delayed Enhancement
How would you treat this?

After 2 months of NSAID and Colchicine
Expiratory diastolic flow reversal
After Rx
**Effusive Constrictive Pericarditis**  
*Mayo Experience*

- A total of 205 patients (2006-2007) who underwent pericardiocentesis
- Constrictive Echo findings in 33 (16.1%)
- Resolution in most patients (Transient CP)
- Constrictive patients had
  - Higher e’
  - More patients with septal bounce
  - Loculated effusion
  - More inflammatory cell in pericardial fluid
  - Pericardiectomy in one patient

*KH Kim, L Sinak et al in Preparation*

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**Annulus Reversus**

- Septal annulus e’ = 10 cm/s
- Lateral annulus e’ = 8 cm/sec

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**Case #7**

52 year old man after EP procedure

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**Case #8**

Syncopy 2 month after surgery  
Large PE and Tamponade

- Mitral Inflow
- Hepatic Vein

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**After Pericardiocentesis**

Persistent JVP Elevation and Dyspnea

- E’ = 10 cm/s

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Thank you for listening!  
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