Infective Endocarditis

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Objectives

Briefly review endocarditis diagnosis/presentation

Discuss changes in epidemiology

Examine treatment strategies in light of changing epidemiology

No disclosures
Endocarditis

- Infection of the endocardial surface of the heart, usually infection of one or more heart valves or intracardiac device.
- Risk factors:
  - cardiac
    - history of prior IE
    - prosthetic valve/cardiac device
    - valvular or congenital heart disease
  - noncardiac factors
    - intravenous drug use
    - indwelling intravenous catheter
    - Immunosuppression
    - recent dental or surgical procedure
Endocarditis--Epidemiology

- From 2000 and 2011, the incidence of infective endocarditis (IE) in US increased from 11 to 15 per 100,000 population
  - Reasons unclear: aging population/IC
- Incidence of IE in IVDU uncertain
  - Estimates: 2-4 cases/1000 years IVDU


J Am Coll Cardiol. 2015 May;65(19):2070-6
Endocarditis--Clinical Signs/Symptoms

- Highly variable:
  - Acute: rapidly progressive infection
  - Subacute or chronic disease with low-grade fever and nonspecific symptoms
- Fever most common symptom of IE (> 90 percent of patients)
- Chills, anorexia, and weight loss.
- Malaise, headache, myalgias, arthralgias, night sweats, abdominal pain, dyspnea, cough, and pleuritic pain
- Cardiac murmur: 85 percent of patients.
- Other supportive signs include splenomegaly and cutaneous manifestations such as petechiae or splinter hemorrhages. Janeway lesions/Osler's nodes.
Endocarditis--Complications

● Cardiac complications (~ 50 percent of patients) – Valvular insufficiency, heart failure

● Neurologic complications (~ 40 percent of patients) – Embolic stroke, intracerebral hemorrhage, brain abscess,

● Septic emboli (~25 percent of patients) – kidneys, spleen most common. Right-sided endocarditis (common among intravenous drug users) septic pulmonary emboli

● Metastatic infection (such as vertebral osteomyelitis, septic arthritis, psoas abscess

Lancet. 2016;387(10021):882
Endocarditis--Diagnosis

The diagnosis is established based on clinical manifestations, blood cultures (or other microbiologic data), and echocardiography.

At least three sets of blood cultures should be obtained from separate sites prior to initiation of antibiotic therapy.

Transthoracic echocardiography (TTE) is the first diagnostic test for patients with suspected IE. Transesophageal echocardiography (TEE) has higher sensitivity than TTE and is better for detection of cardiac complications such as abscess, leaflet perforation.
CDC: Opioid Epidemic with Emphasis on OD Deaths

Overdose Deaths Involving Opioids, by Type of Opioid, United States, 2000-2015

- Any Opioid
- Heroin
- Natural & Semi-Synthetic Opioids
- Other Synthetic Opioids (e.g., fentanyl, tramadol)
- Methadone

Endocarditis in IVDU: Increasing Incidence

277 IE cases were identified: 188 in non-injectors (non-IDU) and 89 in IDU with an increasing proportion of cases attributable to IDU over time. Oxymorphone became the most frequently reported drug.

The IDU group was younger than the non-IDU group (average age of 31.8 ± 9.3 versus 54.2 ± 15.4, respectively, p < 0.001)

More likely Caucasian (95.5% versus 76.1%, p < 0.001) and to be female (51.7% versus 36.2%, p < 0.05).

IDU group was less likely mitral (20.2% IDU versus 43.6% non-IDU, p < 0.01) or aortic valve disease (12.4% IDU versus 34.6% non-IDU, p < 0.01), have cerebral emboli (7.9% versus 27.1%, p < 0.001) and to die (5.6% versus 23.4%, p < 0.001).

Open Forum Infect Dis (2016) 3 (suppl_1): 1116.
Endocarditis in IVDU: Microbiology

Staph aureus most common

Open Forum Infectious Diseases
TV Endocarditis: Management

- The majority of TV IE patients can be managed with medical therapy
  - Mortality in IVDU high and unclear whether surgery provides benefit

- Valve repair is preferred over replacement

- Heart failure and complicated endocarditis are main indications for surgery
  - Limited data on size of vegetation as indication for surgery

- Operative mortality similar to L sided endocarditis
  - Higher rate of re-operation

- Larger studies are required to develop guidelines for management

- International Journal of Cardiology Volume 202, 1 January 2016,
Endocarditis IVDU: Addressing Addiction

- 102 pts with IVDU/endocarditis (2004-2014)
  - 84% SW consult
  - 24% addiction consultation
  - 24% psychiatry consultation
- 56% addiction mentioned in d/c summary
- 8% specific plan for treatment
- 25% mortality rate; median age death 41
Tricuspid Valve Endocarditis

Tricuspid valve infective endocarditis (TVIE) is uncommon. Patients are traditionally treated with antibiotics alone, and indications for operation are not clearly established. We report our operative single-center experience.

Methods
We retrospectively reviewed 56 patients who underwent operations for TVIE between January 2002 and December 2012.

Results
Methicillin-resistant *Staphylococcus aureus* was present in 41% of patients, septic pulmonary emboli in 63%, moderate/severe tricuspid regurgitation in 66%, and 86% were intravenous drug abusers. Patients underwent early operation if there was concomitant left-sided endocarditis with indications for operation (n = 18), atrial septal defect (n = 6), infected pacemaker lead (n = 4), or prosthetic TVIE (n = 1). The remaining 27 patients were treated with intravenous antibiotics. Five patients completed a 6-week course of intravenous antibiotics before requiring an operation for symptomatic severe tricuspid regurgitation or persistent bacteremia. Twenty-two patients did not complete the antibiotic therapy and underwent operation for symptomatic severe tricuspid regurgitation (n = 15), persistent fevers/bacteremia (n = 3), or patient-specific factors (n = 4). Valve repair was successful in 57% of patients. Overall operative mortality was 7.1%. No operative deaths occurred in patients with isolated native TVIE. Recurrent TVIE was diagnosed in 21% (5 of 24) of the replacement group and in 0% (0 of 32) in the repair group. Use of repair was strongly protective against recurrent TVIE (p < 0.01).

Conclusions
In contrast to previously published reports of high operative mortality with TVIE, this experience demonstrates improved outcomes with low morbidity and mortality, particularly for native isolated TVIE. Future prospective comparisons between surgically and medically treated patients may help to further define indications and timing for operation for patients with TVIE.