

Infective Endocarditis

Sunday, November 23, 2014
5:12 PM

Learning Objectives:

- pathophysiology, risk factors, common organisms, signs/symptoms of IE
- lab, microbiologic findings that support IE

INFECTIVE ENDOCARDITIS - endocardium infection (usually involving valves or other underlying heart defect); bacteria & fungi & atypical organisms

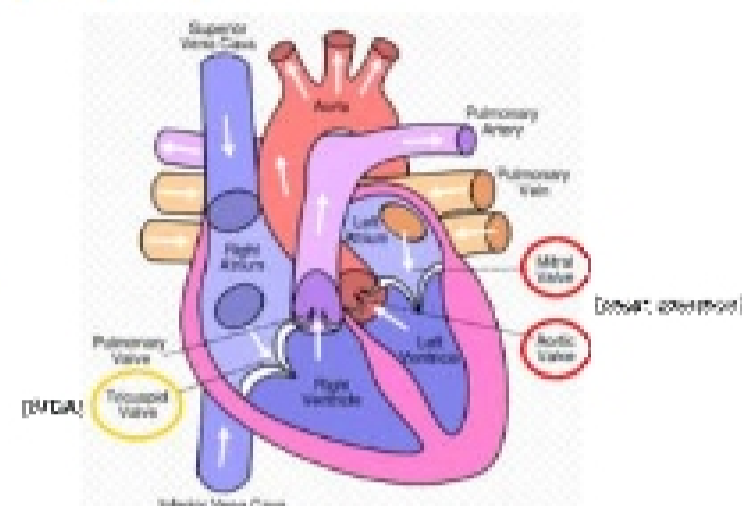
- *uncommon
- *death depends on type

Epidemiology

- men
- >50
- IVDA (younger adults)

Pathophysiology

- 1) turbulent blood flow damages endothelium & valves
- 2) platelets/fibrin
- 3) bacteria
- 4) vegetation (protects bacteria from Abs) / prosthetic valves: bacteria produce biofilm



Complications

- Vegetations (mm-cm):

- Perivalvular Damage
 - HF (valve/muscle rupture, prosthetic valve dehiscence)
 - abscess
 - heart block (conduction)
- Septic Embolus
 - organ abscess/infarction

Right IE	lungs
Left IE	kidney, brain, spleen, skin

- Ab-Complex Embolus (Ag, Ab, complement)

Risk Factors

- IE history
- heart issue:
 - prosthetic valve
 - heart disease
 - hypertrophic cardiomyopathy
 - mitral valve prolapse w/ regurgitation
- IV:
 - central venous catheter
 - IVDA
 - hemodialysis
- dental hygiene
- (DM)

Prosthetic IE

	Yrs after sx
Early	<1 yr
Late	>1 yr

Etiology (Bacteria)

Streptococci	G(+)	Staphylococci*	G(+)	Enterococci	G(+)	Gram (-) Bacilli (Stoch=50-85%)	Fungi	Culture-Negative	HACEK
25-55%		45-70%		5-10%		1.5-15%	1-4%	<5-25%	<5-10%
pairs/chains		clusters		pairs/chains					
mouth		skin		GI/GU					mouth
- Mouth - S. mitis - S. sanguis - S. mutans - S. oralis - S. salivarius - S. intermedius		- Coagulase (+): (50% methicillin-resistant) - S. aureus - Coagulase (-): (50% methicillin-resistant) - S. epidermidis		- E. faecalis - E. faecium		- Enterobacteriaceae: - E. coli - Pseudomonas aeruginosa - Salmonella	- Candida - Aspergillus	- Legionella - Chlamydia - Bartonella - HACEK - Fungi	- Haemophilus - Actinobacillus - Cardiobacterium - Eikenella - Kingella
- GI - S. faecalis				- GI - Genitourinary (GU) (elder men) - GU (younger women)		- (IVDA) (S. aeruginosa) - prosthetic valves - Healthcare	- (IVDA) - Extensive Healthcare - Immunocompromised - Central Venous Catheter	- previous Antibiotics	- Isospora

Clinical Presentation

Symptoms	Signs	Objective Findings
*nonspecific - fever/chills - weakness/malaise - dyspnea (SOB) - night sweats - weight loss	- murmur - splenomegaly - embolism - peripheral	- lab - culture - echo (TTE/TEE)

Lab Findings

- WBC (normal/↑)
- Anemia (normocytic/normochromic)
- Thrombocytopenia (↓platelets)
- ESR/C-Reactive Protein (inflammatory markers)

Cultures

- continuous bacteremia*
- 24 hrs: 3 sets... then 1/day (until negative readings)
- *hold antibiotics until after

Echocardiogram

- presence/size of vegetation
- heart & valve fun
- 1) TTE - false negatives
- 2) TEE - requires sedation

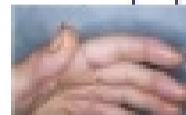
Diagnosis

- DUKE CRITERIA

Definite (+)	Probable	Rejected (-)
- 2 major - 1 major + 3 minor - 5 minor		

Peripheral Signs

OSLER NODES - purple/red sq papules/nodules on pads of fingers/toes caused by embolus; painful



JANeway LESIONS - flat, hemorrhagic plaques on palms/soles; NOT painful



SPLINTER HEMORRHAGES - thin, linear hemorrhages under nails



PETECHIAE - small, red lesions anywhere on skin, but usually on anterior trunk, buccal mucosa/palate, conjunctivae



ROTH SPOTS - retinal infarct w/central pallor & surrounding hemorrhage



FINGER CLUBBING - abnormal growth of fingertips



- Major Criteria: (+) echo, (+) culture
- Minor Criteria: fever, lesions, nodes, etc