

# Cardiology

Mitral Regurgitation: Part II  
(Endocarditis)

Apex → Axilla

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the Sounds: #5

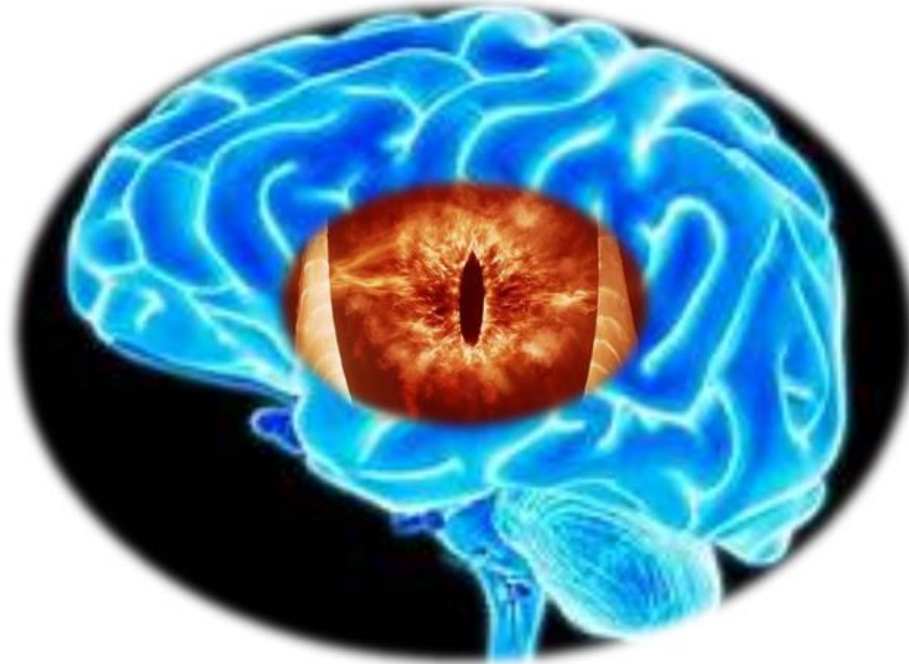


## Scenario III. Vegetations

Acute  
Infectious  
Endocarditis

Subacute  
Bacterial  
Endocarditis

Nonbacterial Thrombotic  
Endocarditis (NBTE)



## Scenario III. Vegetations

Acute  
Infectious  
Endocarditis



Hi virulence  
Normal valves

TBD  
Tricuspid

Staph Aureus:  
GPC clusters  
Catalase +  
Coagulase (+)  
(+) Adhesins

Subacute  
Bacterial  
Endocarditis

Nonbacterial Thrombotic  
Endocarditis (NBTE)

## Scenario III. Vegetations

Acute  
Infectious  
Endocarditis



Hi virulence  
Normal valves

TBD  
Tricuspid

Subacute  
Bacterial  
Endocarditis



Low virulence  
Damaged valves

Viridans Strep  
(mutans, sanguis)  
Grp D Strep  
Coagulase (-) Staph

Nonbacterial Thrombotic  
Endocarditis (NBTE)

# Scenario III. Vegetations

Acute Infectious Endocarditis

↓ Hi virulence  
Normal valves

TBD  
Tricuspid

Subacute Bacterial Endocarditis

↓ Low virulence  
Damaged valves

Viridans strep (mutans, sanguis)  
Grp D strep  
Coagulase (-) staph

Nonbacterial Thrombotic Endocarditis (NBTE)

↓

Sterile Platelet/Fibrin Thrombi

↓

Libman-Sacks

SLE  
APLA

↓

Marantic

Mucinous Adenocarcinoma  
~'Paraneoplastic'~

'White Thrombus'  
*Interwoven strands of fibrin, immune complexes and mononuclear cells*

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Damaged valves

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(mutans, sanguis)  
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Nonbacterial Thrombotic  
Endocarditis (NBTE)

↓  
Sterile Platelet/Fibrin Thrombi

↓  
Libman-Sacks

SLE  
APLA

↓  
Marantic

Mucinous  
Adenocarcinoma  
~'Paraneoplastic'~

Usually discovered in evaluation of  
systemic embolization

# Scenario III. Vegetations

Acute Infectious Endocarditis

↓ Hi virulence  
Normal valves

TBD  
Tricuspid

Subacute Bacterial Endocarditis

↓ Low virulence  
Damaged valves

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Grp D strep  
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Nonbacterial Thrombotic Endocarditis (NBTE)

↓

Sterile Platelet/Fibrin Thrombi

↓

Marantic

Mucinous Adenocarcinoma  
~ Paraneoplastic ~

Patient with midepigastria pain and weight loss...autopsy reveals valve leaflets with platelet-rich thrombi  
*but cultures reveal no bacterial growth...*

# III. Vegetations

Acute  
Infectious  
Endocarditis

↓ Hi virulence  
Normal valves

Tricuspid

Subacute  
Bacterial  
Endocarditis

↓ Low virulence  
Damaged valves

Viridans strep  
(mutans, sanguis)  
Grp D strep  
Coagulase (-) staph

← *Dental*

← *GI/GU*

← *Prosthetics*

'Patient with a murmur, low grade fever, weight loss/weakness and LBP/arthritis. Symptoms present x 3 months.'

## Derivatives:

1. Organism
2. Procedures/Demographics



# III. Vegetations

Acute  
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Damaged valves

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(mutans, sanguis)  
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## Presentation:

Demographics: IVDU, procedure...

→ Fever  
→ Murmur

## Cutaneous Findings:

**Emb:** Janeway, Splinter hemorrhage

**IC:** Osler's node, Roth spot (retina)

# III. Vegetations

Acute  
Infectious  
Endocarditis

Subacute  
Bacterial  
Endocarditis

↓ Hi virulence  
Normal valves

↓ Low virulence  
Damaged valves

Tricuspid  
(*S. aureus*)

Viridans strep  
(mutans, sanguis)  
Grp D strep  
Coagulase (-) staph

Kidney injury may be  
**septic emboli** or **IC disease**

Which IC injury → GN?

## Presentation:

Demographics: IVDU, procedure...

→ Fever  
→ Murmur

## Cutaneous Findings:

**Emb:** Janeway, Splinter hemorrhage

**IC:** Osler's node, Roth spot (retina)

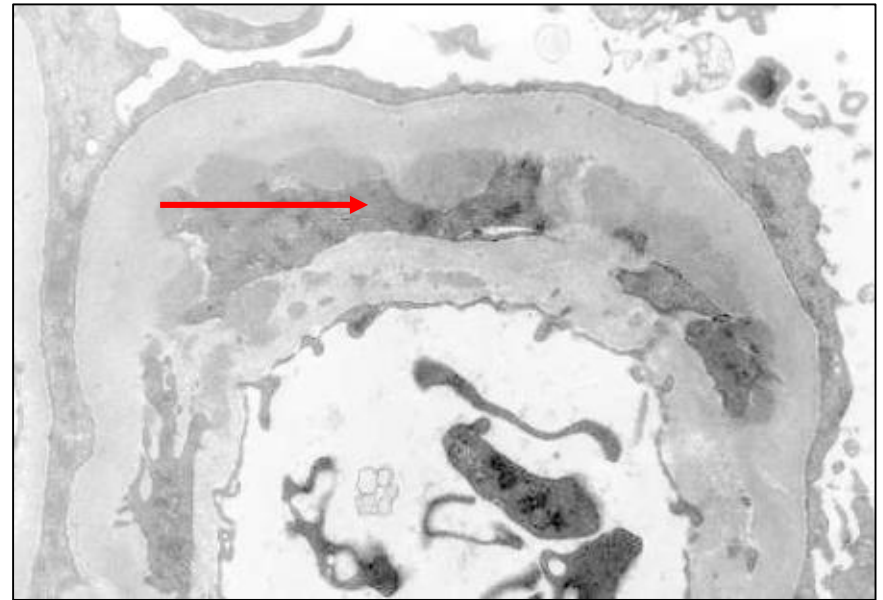
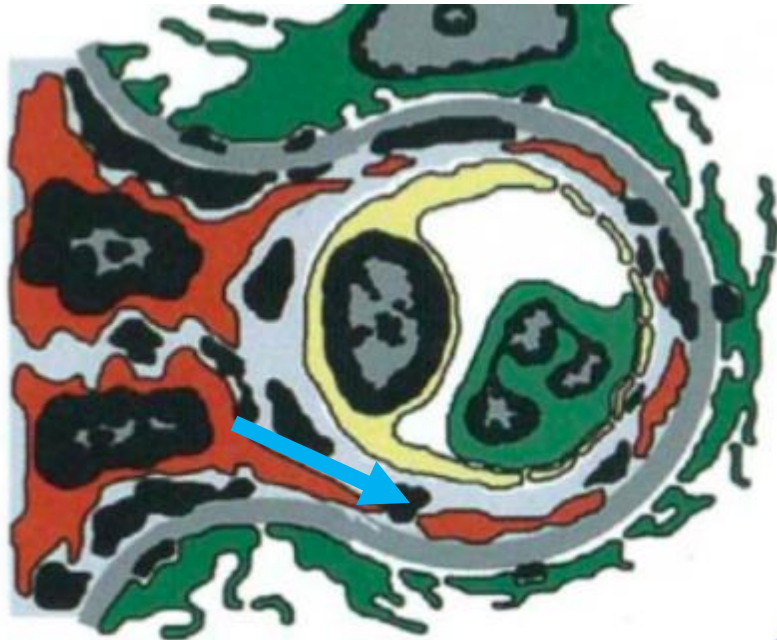
## Septic Emboli:

Lung (abscess), **Kidney**,  
Brain (CVA, abscess)

## Other:

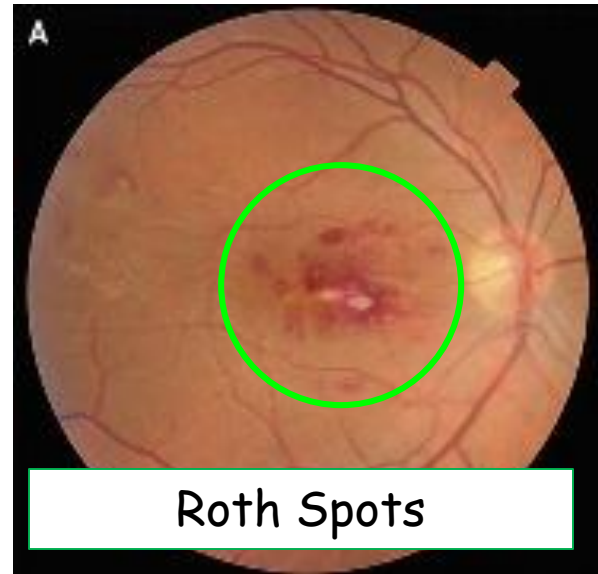
Splenomegaly, **Hematuria (IC)**  
(+) Blood Cultures

Membranoproliferative  
Type I (as in IE)



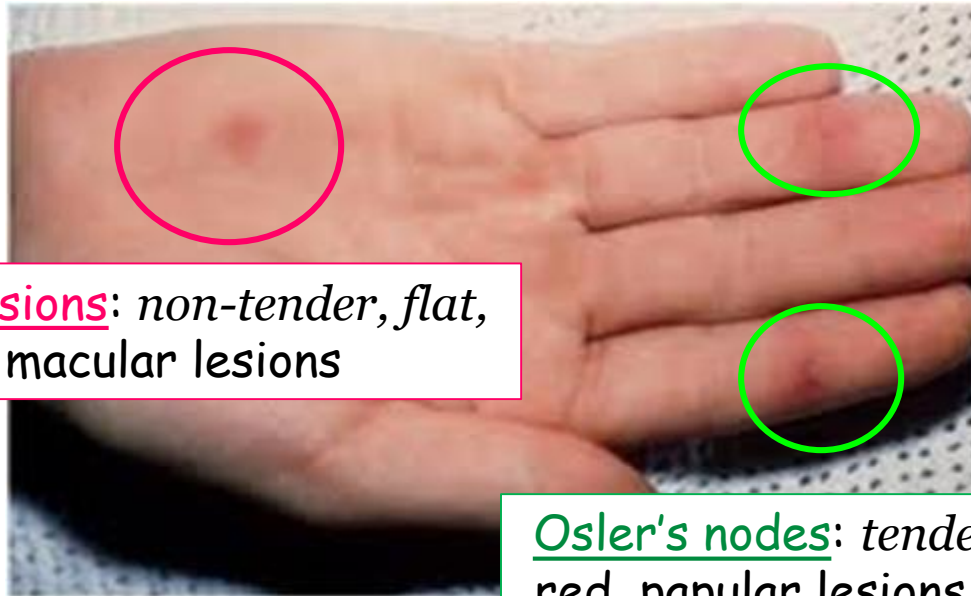
Tram Track appearance (of mesangial cells splitting GBM)

Splinter hemorrhage



Roth Spots

Embolic



IC

Janeway lesions: non-tender, flat, red, macular lesions

Osler's nodes: tender, raised, red, papular lesions on digits

# Subacute Bacterial Endocarditis (SBE)

Colon Ca

*S. bovis*

(-) 6.5% saline  
(+) bile

Dental

*S. mutans*

Optochin  
Resistant

Urologic

*Enterococcus*

(+) 6.5% saline  
(+) bile

VV replacement

*S. epidermidis*

Catalase (+)  
Coagulase (-)  
Novobiocin (S)

# Subacute Bacterial Endocarditis (SBE)

Colon Ca

*S. bovis*

(-) 6.5% saline  
(+) bile

Wt loss  
Stool change  
Fe def Anemia  
↓ MCV

Dental

*S. mutans*

Optochin  
Resistant

Adheres to  
damaged  
tissue via  
dextran -  
fibrin binding

Urologic

Enterococcus

(+) 6.5% saline  
(+) bile

VV replacement

*S. epidermidis*

Catalase (+)  
Coagulase (-)  
Novobiocin (S)

All these patients will have fever and heart murmur. Listed above are the modifying features that make for great derivatives...

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*S. bovis*

(-) 6.5% saline  
(+) bile

Wt loss  
Stool change  
Fe def Anemia  
↓ MCV

Dental

*S. mutans*

Optochin  
Resistant

Adheres to  
damaged  
tissue via  
dextran -  
fibrin binding

Urologic

*Enterococcus*

(+) 6.5% saline  
(+) bile

Urosepsis  
Cystoscopy

Rx  
Ampicillin/Gent  
VRE

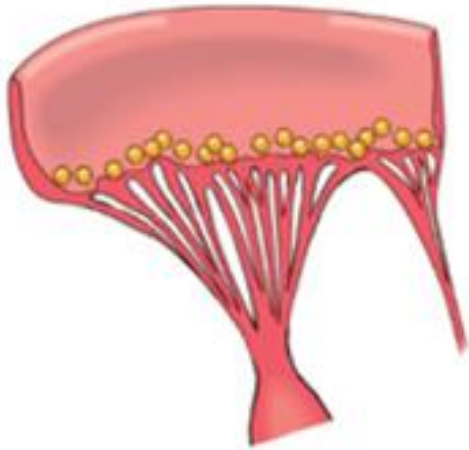
VV replacement

*S. epidermidis*

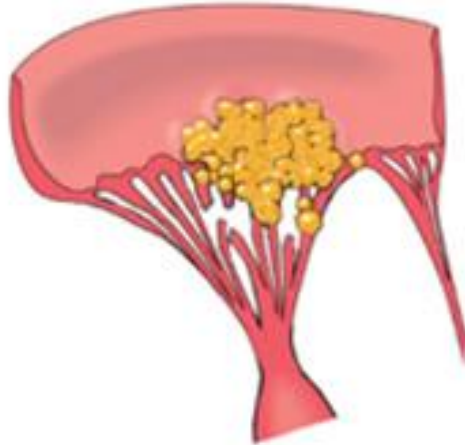
Catalase (+)  
Coagulase (-)  
Novobiocin (S)

Rx  
Vancomycin

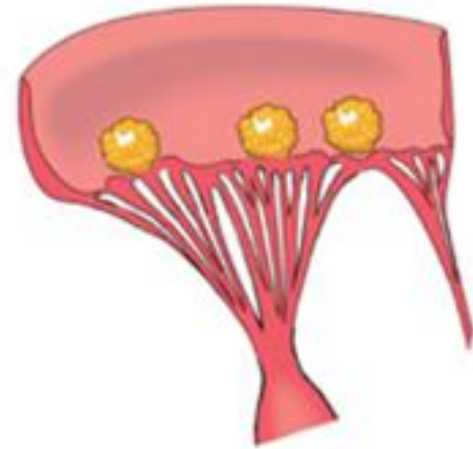
For SBE, these are the quick and dirty derivatives...



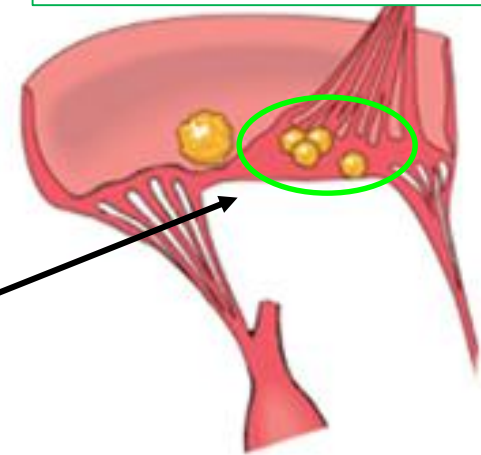
Rheumatic Heart Disease and Valvulitis



Infectious Endocarditis



Marantic (NBTE)



Libman-Sacks (NBTE)

I really want to delete this slide but can't.  
SLE is only valvular lesion that will be described with involvement on both sides of valve.  
If no one cares, delete it from your brain.



# Mitral Regurgitation: Summary

- Physical Exam
  - Systolic murmur at apex radiating to axilla
- Hemodynamic
  - Midsystolic elevation of LA pressure curve
- Clinical Vignettes
  - Dilated cardiomyopathy → dilated annulus/regurgitation
    - Rx: ACE-I to reduce afterload/increase forward fraction
  - Ruptured papillary muscle/chordae in AWMi (MΦ phase)
  - **Endocarditis**
    - Subacute bacterial endocarditis
    - Manifestations/Complications
    - Derivatives

# Cardiology

Mitral Regurgitation

Apex → Axilla

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the Sounds #5

