
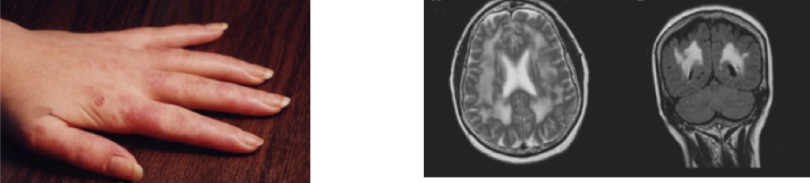


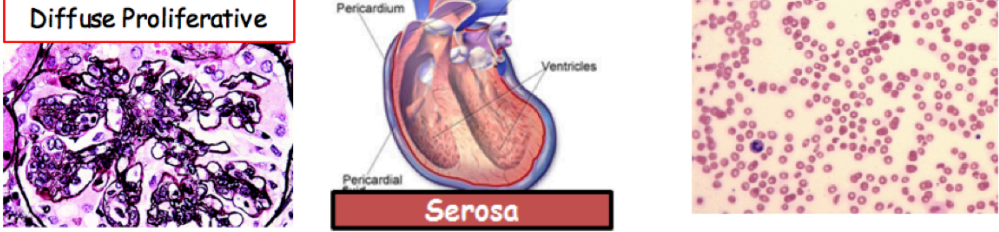
SLE and APLA for the USMLE Step One Exam



A vertical column of four images on the left side of the slide. From top to bottom: a woman's face with a prominent red, butterfly-shaped rash across her cheeks and bridge of nose; a person's back showing a widespread, red, scaly rash; a close-up of the mouth showing white, plaque-like lesions on the inner lining; and a close-up of skin showing several raised, red, circular lesions.



Two images at the top of the right section. On the left, a close-up of a hand showing a red, scaly rash on the fingers and palm. On the right, two axial MRI scans of the brain, labeled 'A' and 'B', showing hyperintense areas in the white matter, characteristic of CNS involvement in SLE.



Three images in the middle of the right section. On the left, a histological slide labeled 'Diffuse Proliferative' showing glomerular pathology with hypercellularity and crescent formation. In the center, an anatomical diagram of the heart with labels for 'Atria', 'Ventricles', and 'Pericardium', and a red box labeled 'Serosa' at the bottom. On the right, a histological slide showing a dense population of small, purple-stained cells, likely representing leukopenia.

1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [nephritic (diffuse proliferative)/nephrotic]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia

Howard J. Sachs, MD
www.12DaysinMarch.com
E-mail: Howard@12daysinmarch.com

SLE: immune complex deposition

(*Prototypic: Type III Hypersensitivity Rxn*)



Type III refers to immune complex deposition

SLE = III (3 letters)



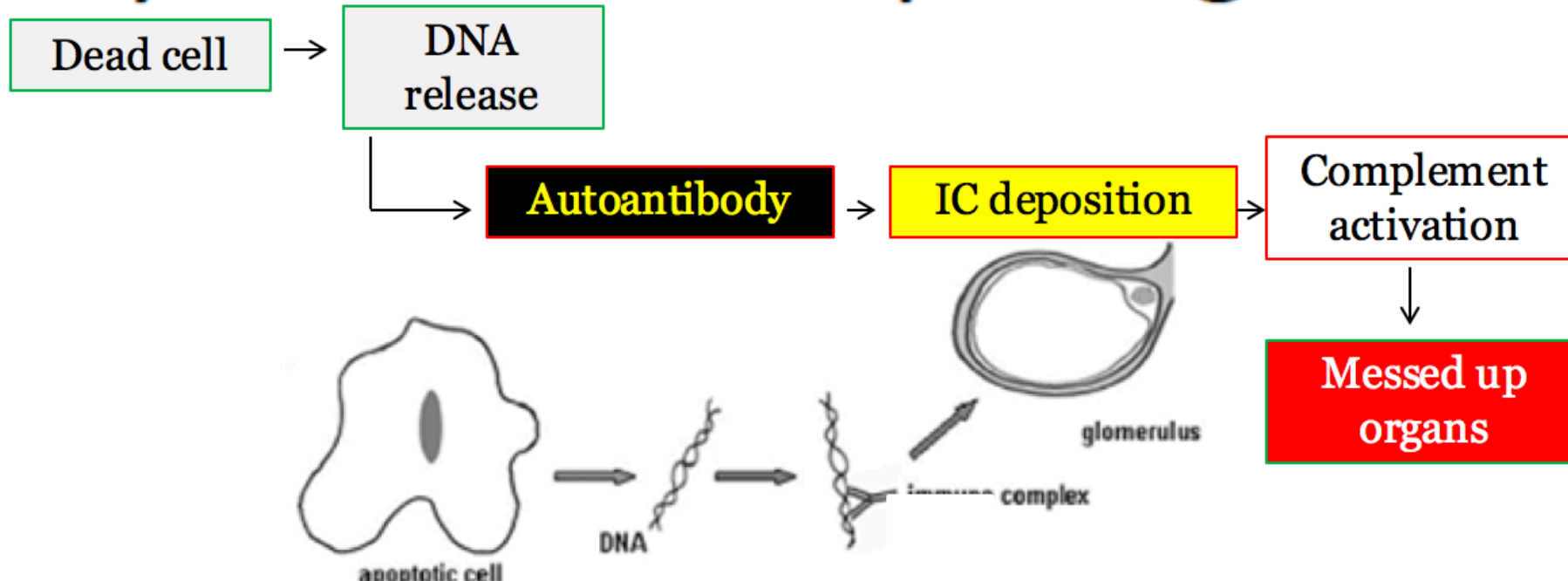
SLE: immune complex deposition

(Prototypic: Type III Hypersensitivity Rxn)

Type III refers to immune complex deposition

SLE = III (3 letters)

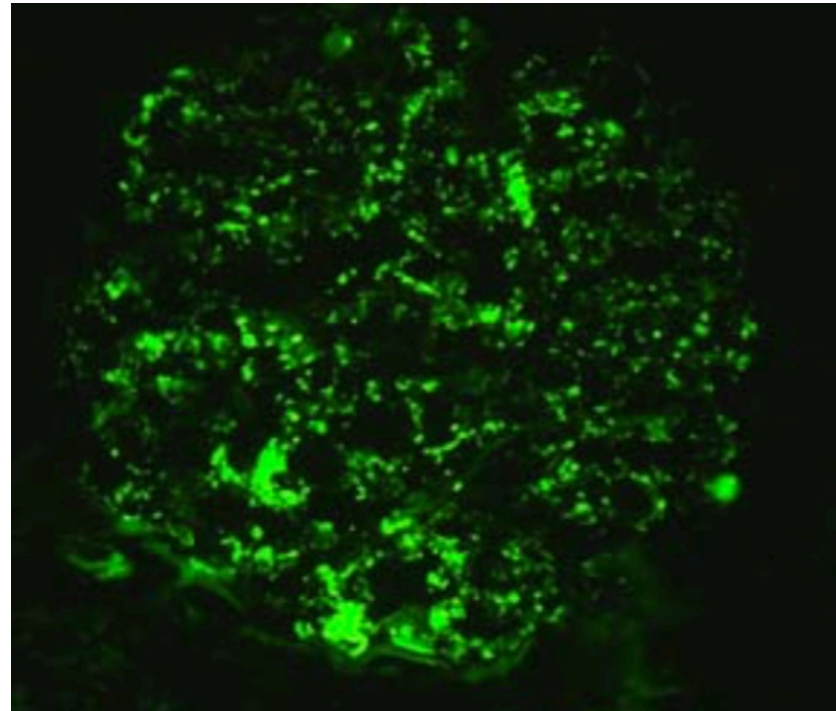
Key events in SLE pathogenesis



SLE: immune complex deposition

(*Prototypic: Type III Hypersensitivity Rxn*)

Type III refers to immune complex deposition



SLE: immune complex deposition

(*Prototypic: Type III Hypersensitivity Rxn*)

Type III refers to immune complex deposition

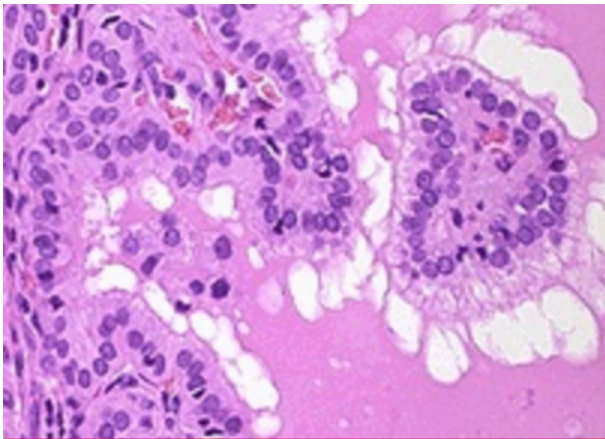
Be able to compare and contrast with the prototypic **Type II Hypersensitivity** rxns
(*immune attack of fixed tissue antigens*)

SLE: immune complex deposition

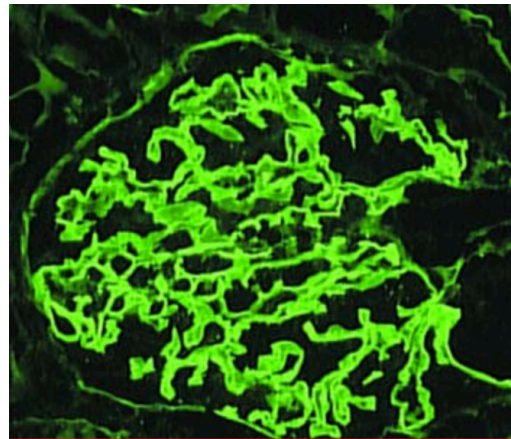
(*Prototypic: Type III Hypersensitivity Rxn*)

Type III refers to immune complex deposition

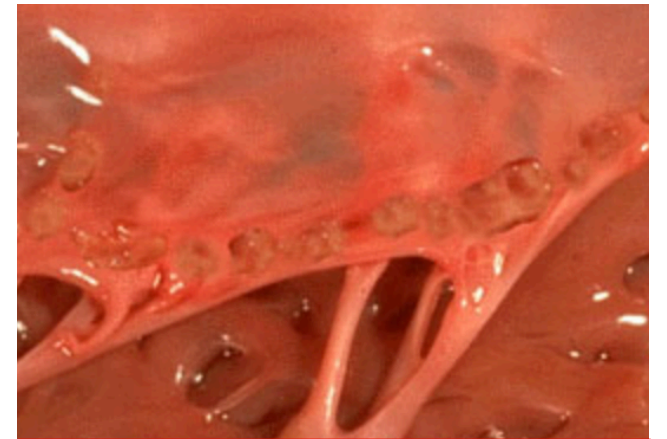
Be able to compare and contrast with the prototypic **Type II Hypersensitivity** rxns (*immune attack of fixed tissue antigens*)



Grave's Disease



Anti-GBM Disease



Rheumatic Valvulitis

SLE: immune complex deposition

(*Prototypic: Type III Hypersensitivity Rxn*)

This entity is the prototypic **MULTISYSTEM** disease.

The Good News:

1. I haven't seen a single question where the diagnosis is in question?
2. They describe the classic patient but then ask **derivatives** (e.g. valvular vegetations, APLA, renal findings, thrombocytopenia, immunology, etc).

SLE: The (11) Diagnostic Criteria



- 4 – Derm
- 5 – Organ Systems
- 2 – Laboratory
- 11



Malar Rash



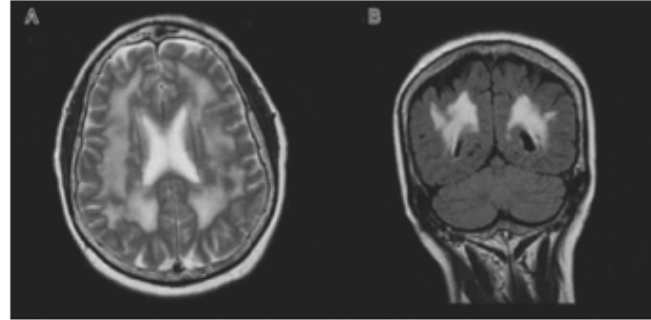
Photosensitivity



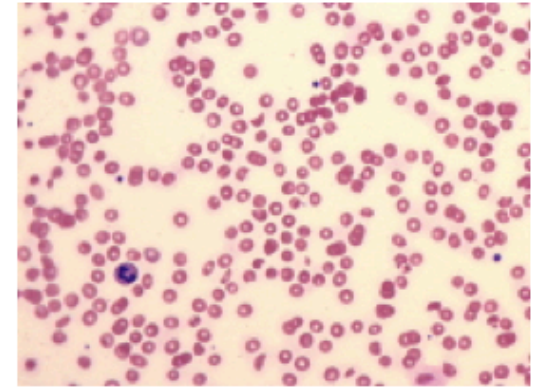
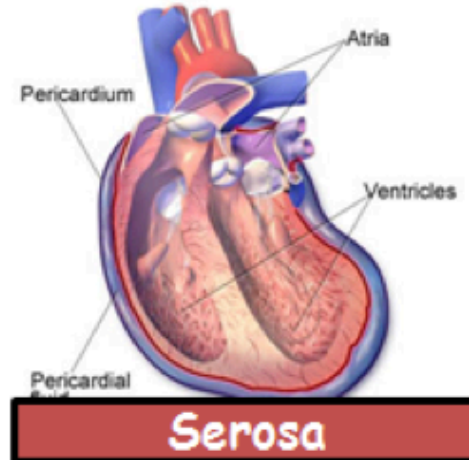
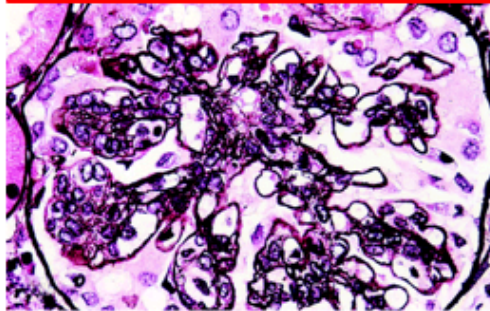
Aphthous Ulcer



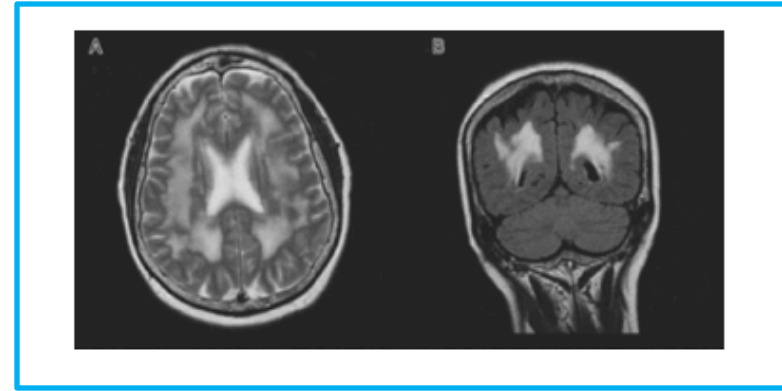
Discoid Rash



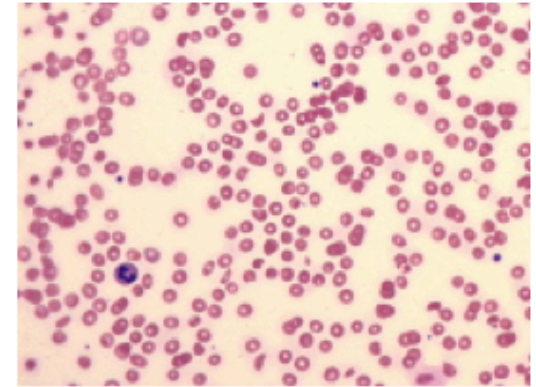
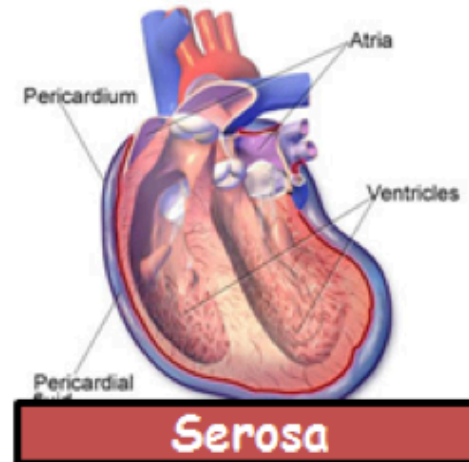
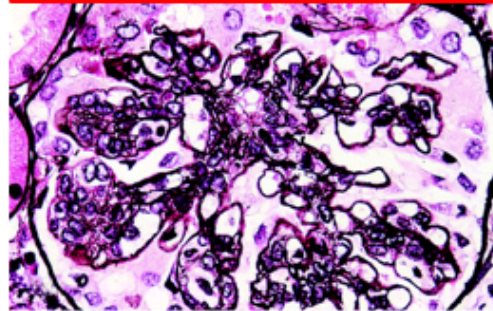
Diffuse Proliferative



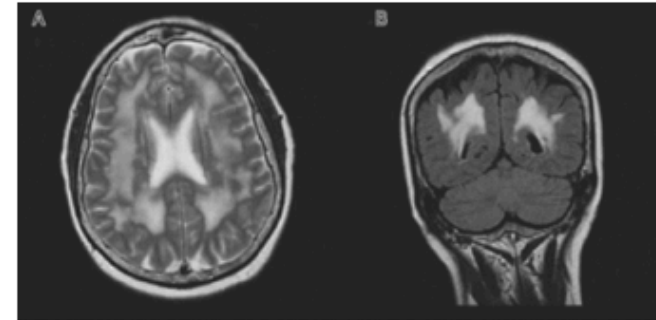
1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [nephritic (diffuse proliferative)/nephrotic]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia



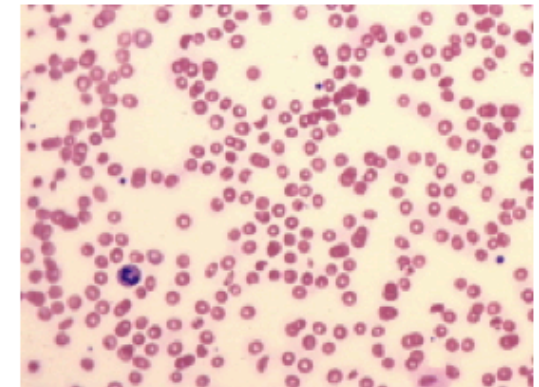
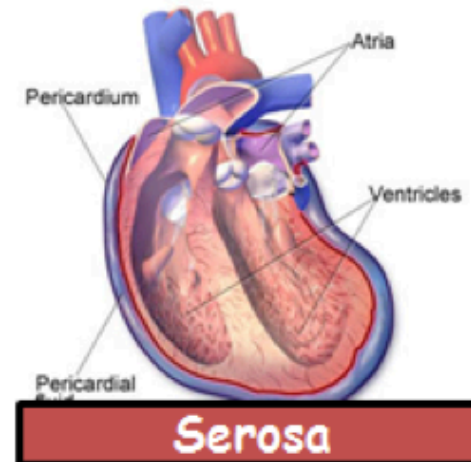
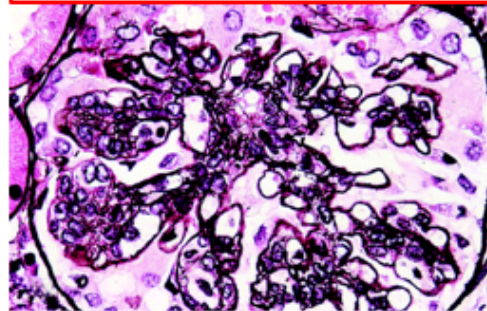
Diffuse Proliferative



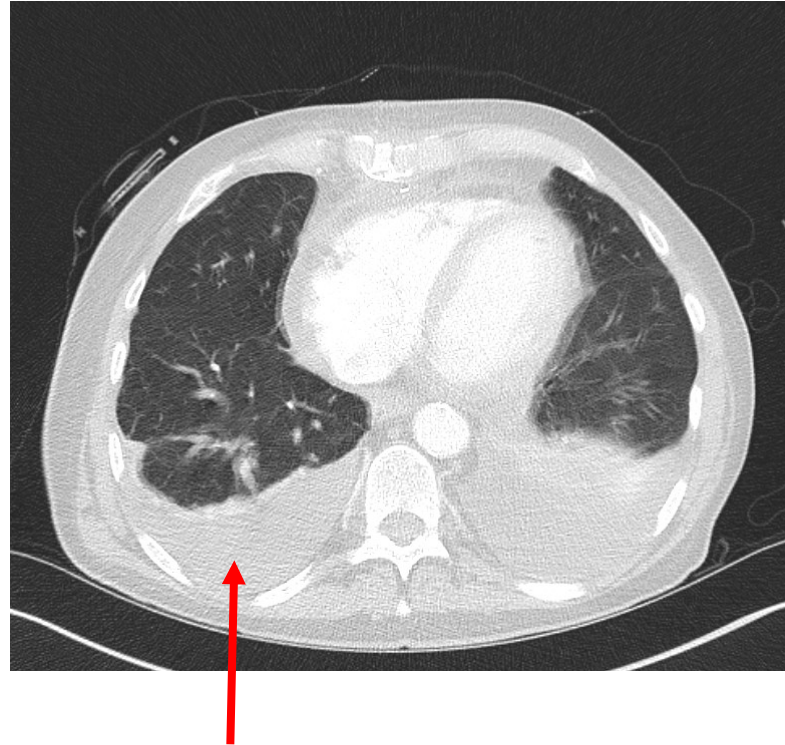
1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [nephritic (diffuse proliferative)/nephrotic]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia



Diffuse Proliferative



1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [**nephritic** (diffuse proliferative)/**nephrotic**]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia



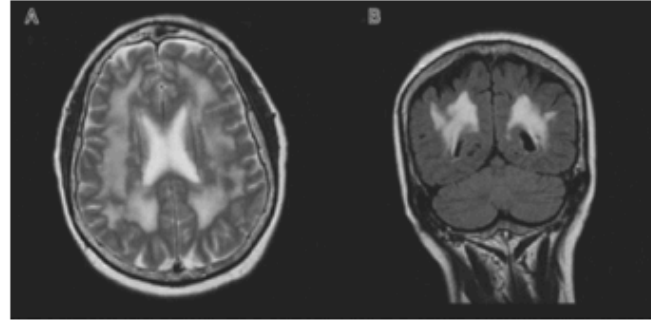
1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [nephritic (diffuse proliferative)/nephrotic]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia



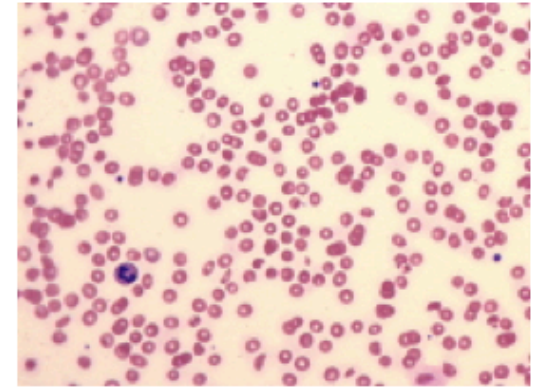
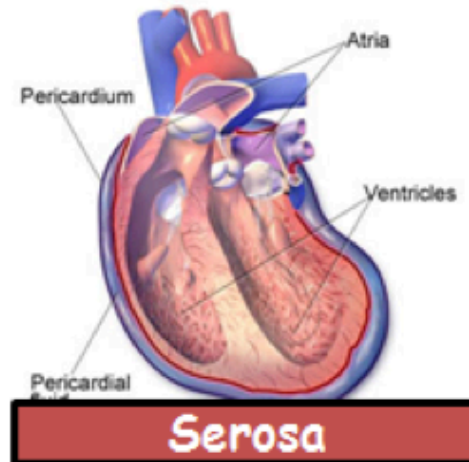
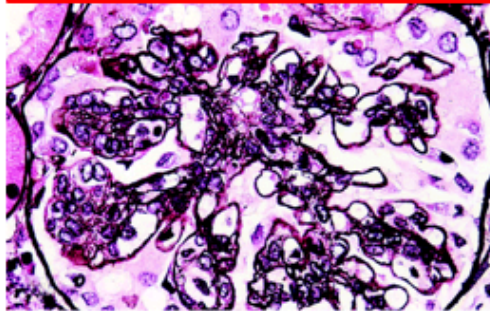
Few Platelets



1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [nephritic (diffuse proliferative)/nephrotic]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia

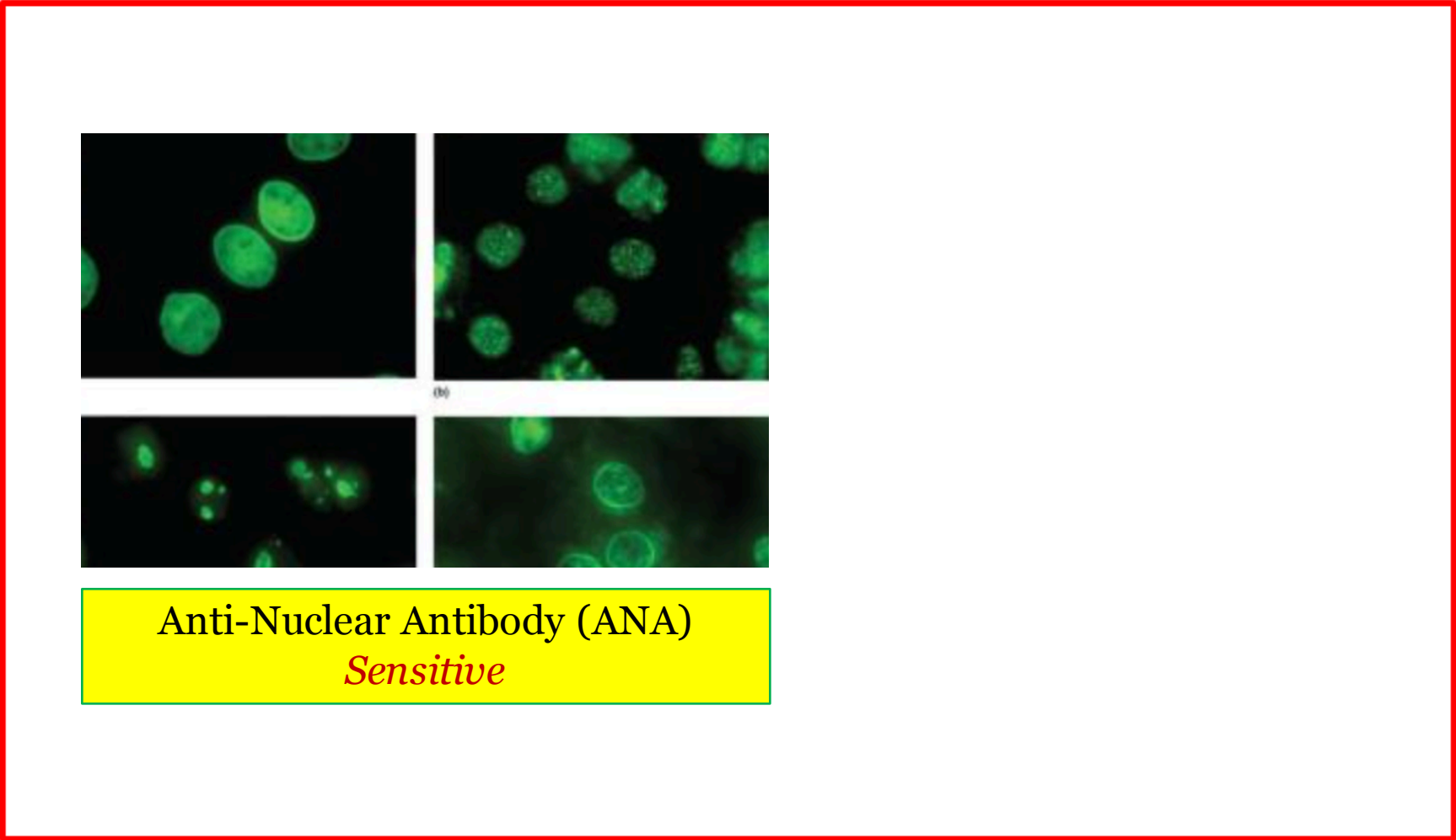


Diffuse Proliferative



1. Non-erosive arthropathy (especially small joints)
2. CNS manifestations (seizure, psychosis)
3. Renal involvement [nephritic (diffuse proliferative)/nephrotic]
4. Serositis (pleura, pericardium)
5. Hematologic: AHA, Autoimmune Thrombocytopenia, Leukopenia

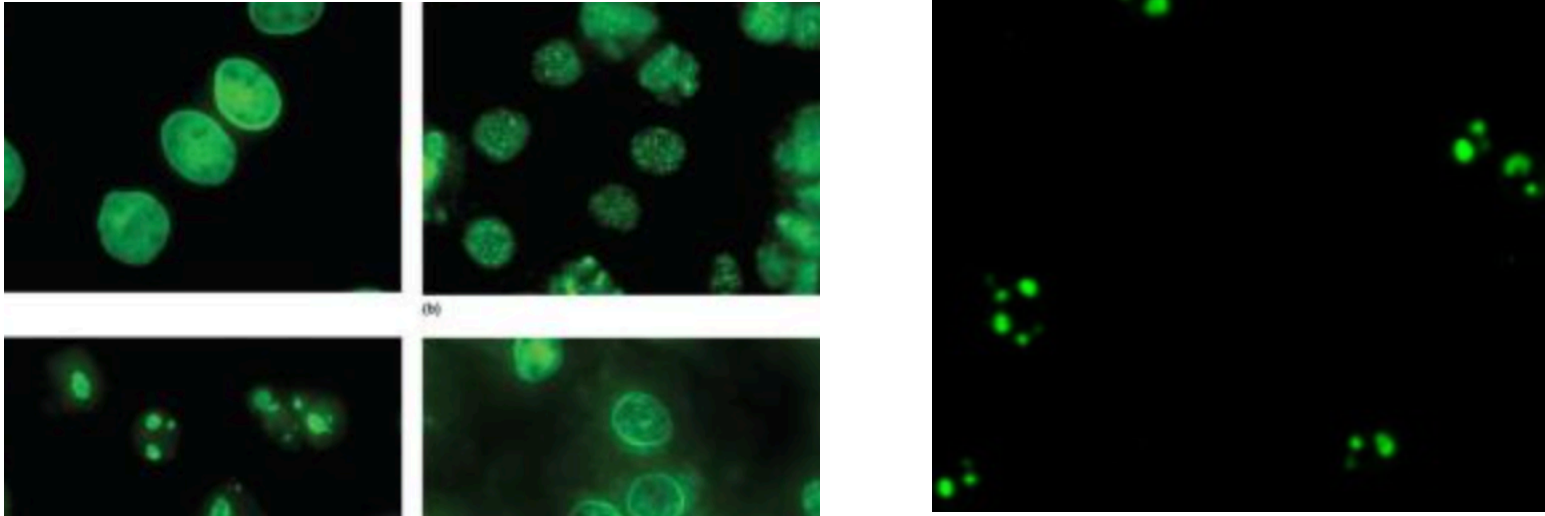
Laboratory Criteria



Anti-Nuclear Antibody (ANA)
Sensitive

ANA plus...(next slide)

Laboratory Criteria



The image displays two sets of fluorescence microscopy results. On the left, four panels show ANA staining: the top row shows a control with diffuse green nuclear staining, and the bottom row shows a patient sample with a similar pattern. On the right, a single panel shows Anti-dsDNA staining, characterized by distinct, bright green foci within the nuclei.

Anti-Nuclear Antibody (ANA)
Sensitive

Anti-dsDNA
Specific

ANA plus...(next slide)

Laboratory Criteria: ANA plus one of the following

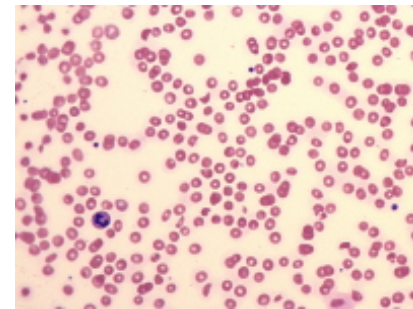
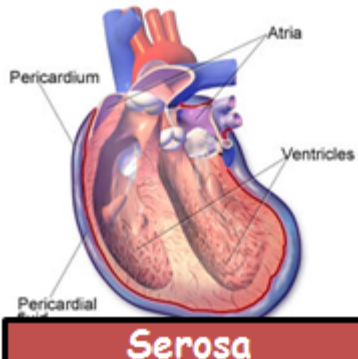
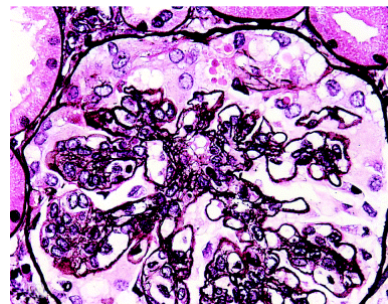
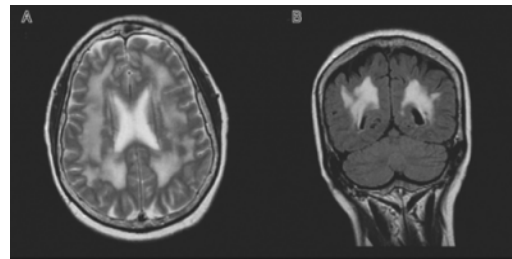
Anti-ssDNA
Anti-Smith

'Thrombophilia' Labs:
Antiphospholipid Antibody
Lupus Anticoagulant
False (+) VDRL [(-) *Treponemal IgG*]

4

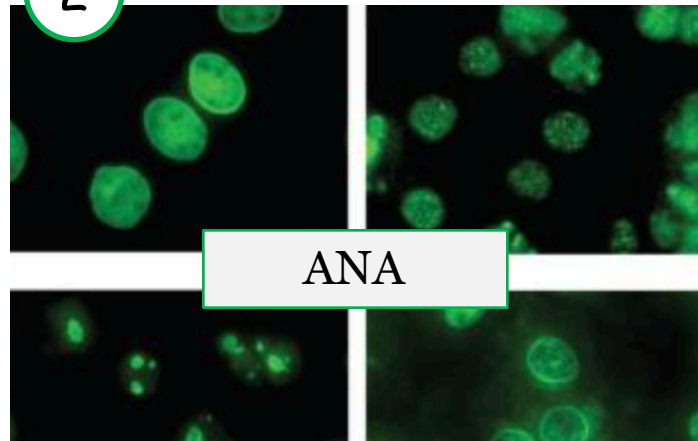


5



Definite Lupus: 5/11 Criteria

2



ANA

Anti-dsDNA
Anti-ssDNA
Anti-Smith
APLA
LA
(+) VDRL

SLE derivatives: Drug-induced Lupus

Procainamide



Hydralazine



- They won't use drug by name.
- They will describe a mechanism of action or indication.
- They might toss in a lupus symptom (serositis or malar rash)...
- ...inquire about best laboratory test: **Anti-Histone Antibody**

SLE derivatives: The Thrombophilic Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

SLE derivatives: The Thrombophilic Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

Clinical presentation:

1. Recurrent fetal demise (miscarriage)
2. Thrombocytopenia
3. Elevated aPTT (*in vitro*)
4. Thrombosis (arterial & venous)

SLE derivatives: The Thrombophilic Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

Anticardiolipin (IgG, IgA, IgM)

False (+) RPR

Lupus Anticoagulant (\uparrow *PTT*)



β 2-glycoprotein 1

target of anticardiolipin ab

SLE derivatives: The Thrombophilic Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

Anticardiolipin (IgG, IgA, IgM)

False (+) RPR

Lupus Anticoagulant (\uparrow *PTT*)

β 2-glycoprotein 1



SLE derivatives: The Thrombophilic Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

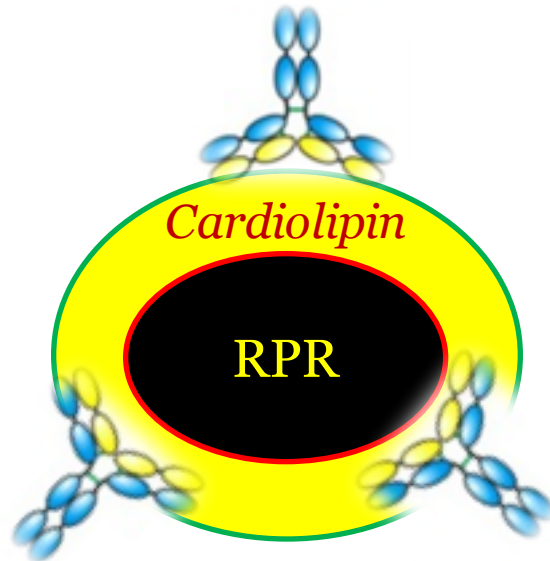
Anticardiolipin (IgG, IgA, IgM)



False (+) RPR

Lupus Anticoagulant (\uparrow PTT)

Cross reactivity (the antigen has cardiolipin)



SLE derivatives: The Thrombophilic Blood Tests

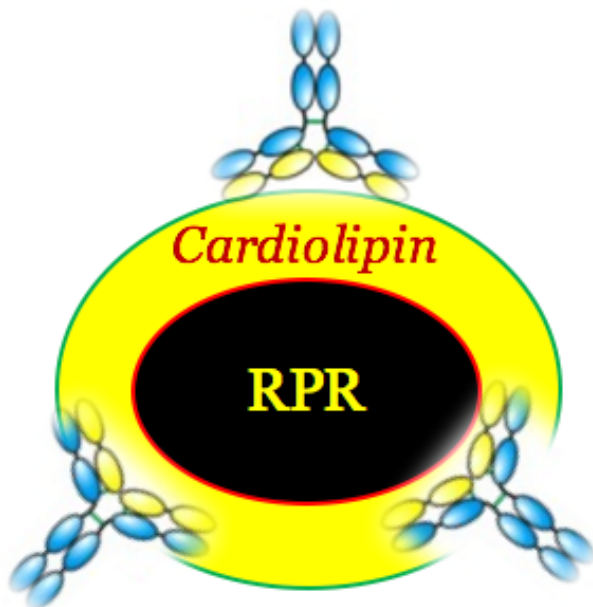
Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

Anticardiolipin (IgG, IgA, IgM)



False (+) RPR

Lupus Anticoagulant (\uparrow PTT)



“...patient tests (+) for VDRL or RPR but a fluorescent *treponemal* antibody absorption test (FTA-ABS) is negative.”

SLE derivatives: The Thrombophilic Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

Anticardiolipin (IgG, IgA, IgM)



False (+) RPR

Lupus Anticoagulant (\uparrow PTT)

Cross reactivity (the antigen has cardiolipin)

“...patient tests (+) for VDRL or RPR but a fluorescent treponemal antibody absorption test (FTA-ABS) is negative.”

This is the **Language** of SLE/APLA Syndrome

SLE derivatives: The **Thrombophilic** Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(*cell membrane or circulating protein-PPL complexes*)

Anticardiolipin (IgG, IgA, IgM)

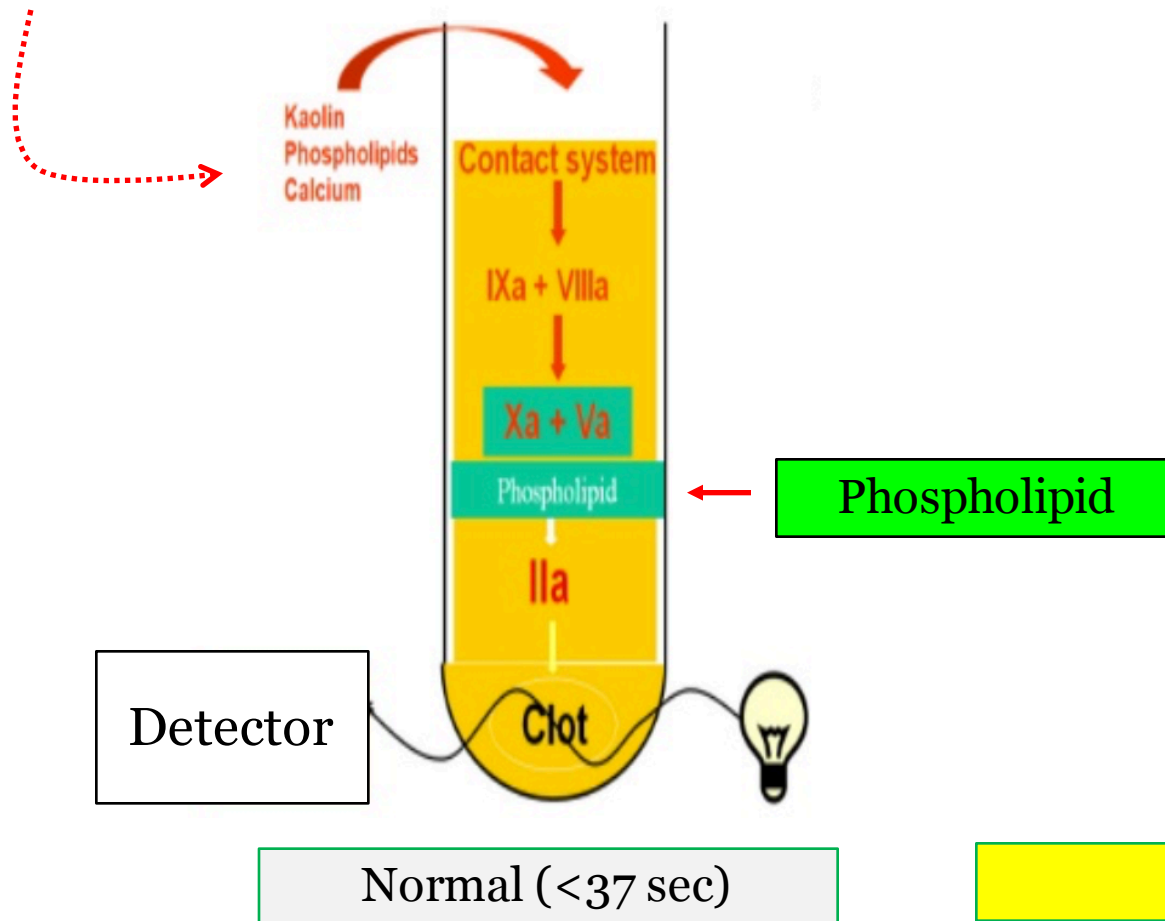
False (+) RPR

Lupus **Anticoagulant** (\uparrow *PTT*)

SLE derivatives: The Thrombophilic Blood Tests

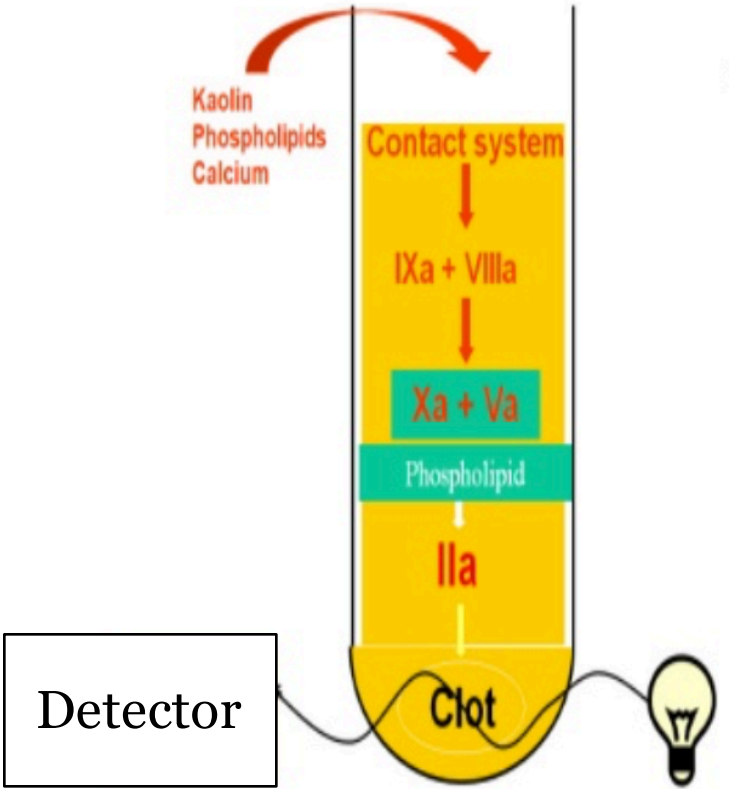
Lupus Anticoagulant (\uparrow PTT)

Activates coagulation cascade



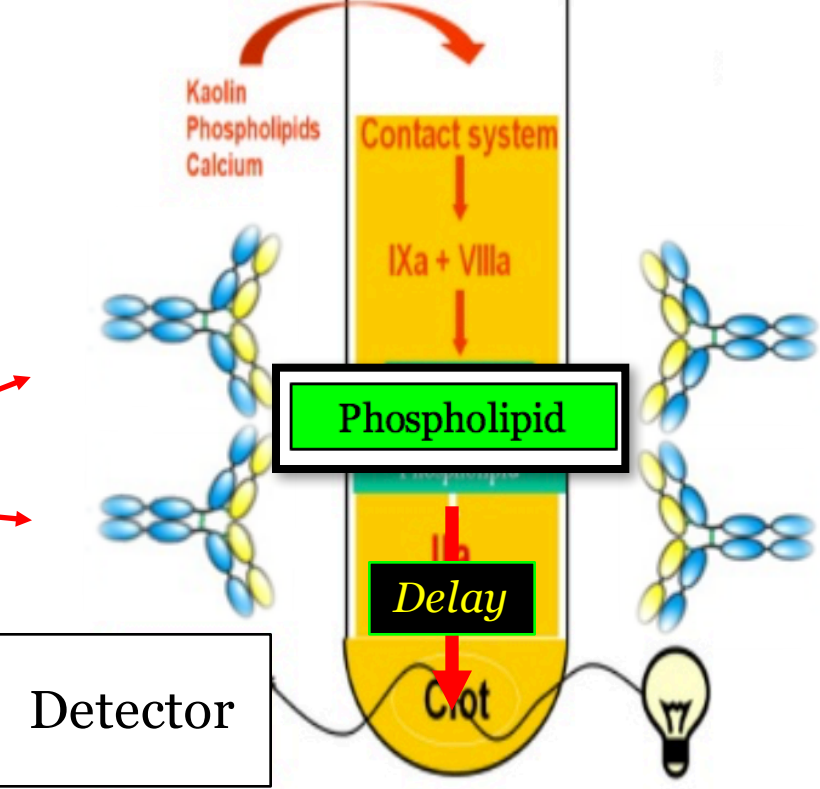
SLE derivatives: The Thrombophilic Blood Tests

Lupus Anticoagulant (\uparrow PTT)



Normal (<37 sec)

Anti-Cardiolipin IgG

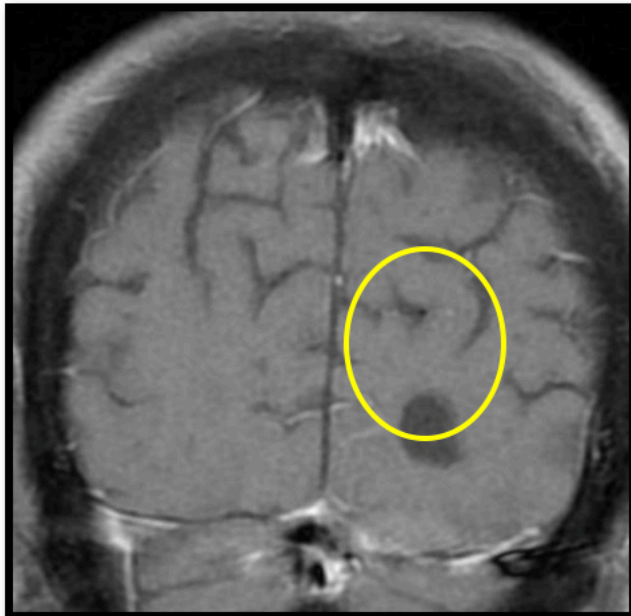


In Vitro

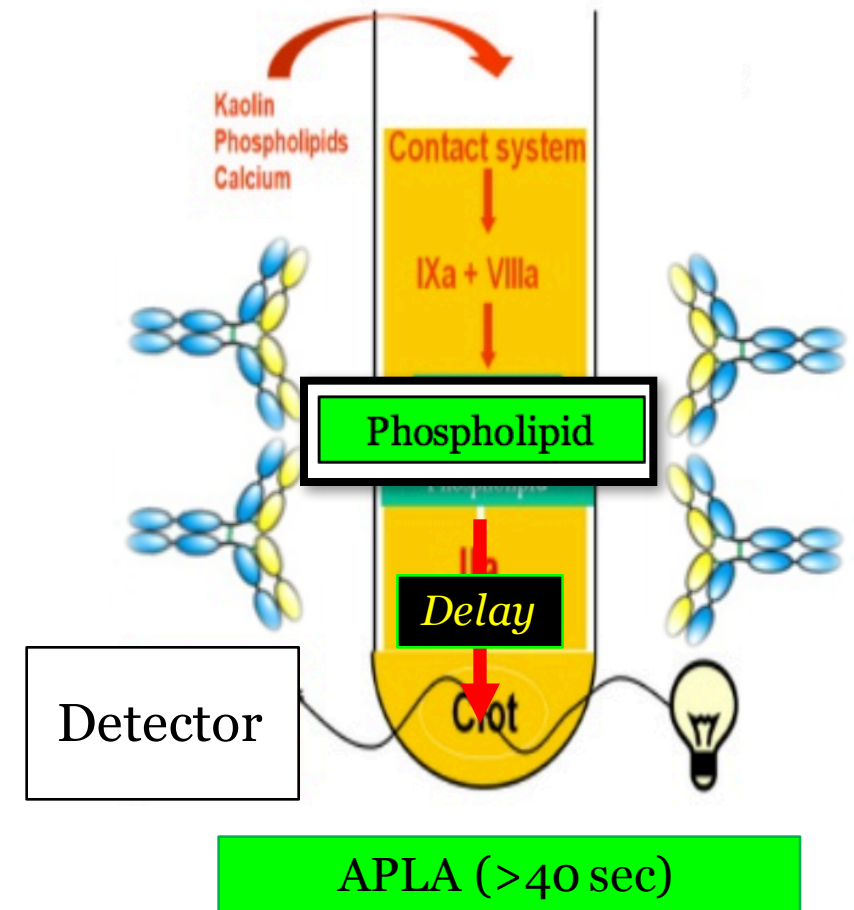
APLA (>40 sec)

SLE derivatives: The Thrombophilic Blood Tests

Lupus Anticoagulant (\uparrow PTT)



In Vivo
(in life)



SLE derivatives: The Thrombophilic Blood Tests

Lupus Anticoagulant (\uparrow *PTT*)

Historically, SLE patients were noted with a prolonged PTT long before PPL antibodies were discovered.

SLE derivatives: The Thrombophilic Blood Tests

Lupus Anticoagulant (↑ *PTT*)

Historically, SLE patients were noted with a prolonged PTT long before PPL antibodies were discovered.

New Name:

Prolonged PTT in some patients with SLE due to circulating antibodies against PPL
with a seemingly paradoxical increase risk of clotting
(but it isn't really paradoxical because those antibodies activate PLTS among other things)

SLE derivatives: The **Thrombophilic** Blood Tests

Antiphospholipid Antibodies: antibodies directed against the phospholipid antigens
(cell membrane or circulating protein-PPL complexes)

Anticardiolipin (IgG, IgA, IgM)

False (+) RPR

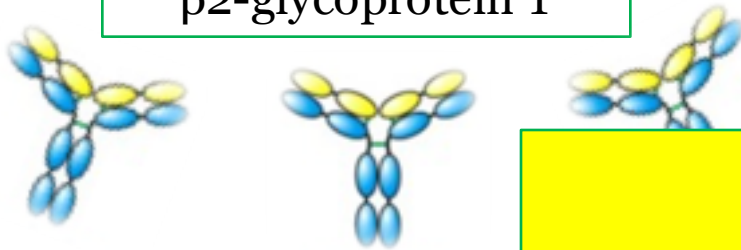
Lupus Anticoagulant (\uparrow PTT)

target of anti \downarrow cardiolipin aby

Negative Anti-Treponemal Aby

Paradoxical risk of thrombosis

β 2-glycoprotein 1



Clinical presentation:

1. Recurrent fetal demise (miscarriage)
2. Thrombocytopenia
3. Elevated aPTT (*in vitro only*)
4. Thrombosis (arterial & venous)

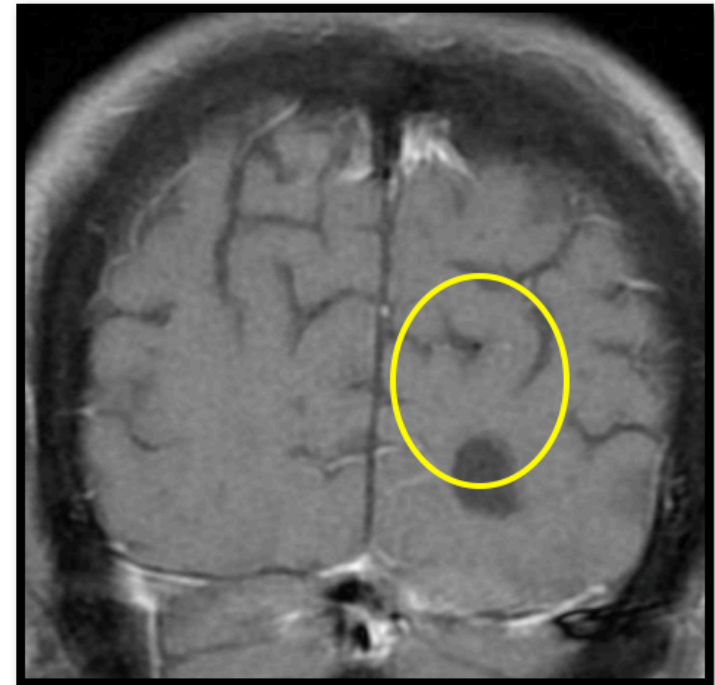
Derivative: Libman-Sacks Endocarditis



10% of SLE
30% of APLA

Derivative: Libman-Sacks Endocarditis

Derivative: aka Verrucous Endocarditis



Derivative: Libman-Sacks Endocarditis

Derivative: aka Verrucous Endocarditis

Derivative: aka *Nonbacterial Thrombotic Endocarditis*



Microthrombi

10% of SLE
30% of APLA

Derivative: Libman-Sacks Endocarditis

Derivative: aka Verrucous Endocarditis

Derivative: aka Nonbacterial *Thrombotic* Endocarditis



Sterile vegetations result from accumulation of immune complexes, mononuclear cells → *fibrin and platelet thrombi*



SLE and Derivatives

- Prototypic Immune Complex Disorder
 - Type III Hypersensitivity
 - Compare and contrast with Type II
 - Diagnostic criteria
 - 4 Skin (Malar rash)
 - 5 Organ Systems
 - 2 Laboratory
 - Drug-induced lupus
 - Antiphospholipid Antibody Syndrome
 - Anticardiolipin, False (+) RPR, Lupus anticoagulant
 - Nonbacterial Thrombotic Endocarditis
- Thrombotic complications*

SLE and APLA for the USMLE Step One Exam



12DaysinMarch

Tutorial Services

Howard J. Sachs, MD
www.12DaysinMarch.com
E-mail: Howard@12daysinmarch.com