Scleroderma
Systemic Lupus Erythematosus
Dermatomyositis

A.C.O.I. Board Review 2019
Systemic Lupus Erythematosus

**Incidence**
- 20-150/100,000
- 150-410 in women

**Peak age** 17-40

**Female:Male**
- 5:1 in peak ages
- 2:1 for all age groups
Variants

- **Subacute**
  - Cutaneous Lupus
    - non-fixed rash
    - non-scarring
    - associated with SS-A antibody

- **Discoid**
  - Scarring rash with central atrophy

- **Lupus Pernio**
  - variant of sarcoidosis
  - violaceous plaques over the face, ears,
  - 86% - hepatic granulomas
  - 20%-hepatomegaly

- **Systemic (SLE)**
DRUG INDUCED LUPUS

- procainamide
- isoniazide
- hydralazine
- methyldopa
- chlorpromazine
- dilantin
- quinidine
- penicillamine
- possible association - griseofulvin antibiotics, gold salts

- ANA positive for up to 1 year
- Anti-histone antibody positive in 95%
- No change in complement
- CNS and renal disease are rare
- usually mild disease
ACR SLE Criteria

(must have at least 4 of 11)

1) Malar Rash
2) Discoid Rash
3) Photosensitive Rash
4) Oral Ulcers
5) Arthritis
6) Serositis
7) Renal
8) Neurologic
9) Hematologic
10) Other Lab (anti-double stranded DNA, ENA, VDRL)
11) ANA
2012 SLICC SLE Diagnostic Criteria

Option One
- 4 criteria
  - At least one clinical criteria
  - At least one immunologic criteria

Option Two
- Biopsy proven nephritis
- Positive ANA or anti double stranded DNA
2012 SLICC
SLE Clinical Criteria

- Acute cutaneous lupus
- Chronic cutaneous lupus
- Oral ulcers
- Non scarring alopecia
- Synovitis (2 or more joints)
- Serositis
- Renal (>500mg protein or RBC casts)
- Neurologic (Seizure, psychosis, myelitis, mononeuritis multiplex, acute confusion, cranial neuropathy)
- Hemolytic anemia
- Leukopenia
- Thrombocytopenia
2012 SLICC
SLE Laboratory Criteria

- ANA
- Anti-DNA
- Anti-SM (Smith)
- Antiphospholipid
- low complement
- Direct coombs without hemolysis
New ACR/EULAR Criteria

- Must have a positive ANA 1:80 or above or equivalent other test
- At least one clinical domain
- At least 10 points
- Criteria do not have to be contemporaneous
- Only count the highest point value from each domain
Clinical Domains

Constitutional Domain
- Fever 2 points

Cutaneous Domain
- Non scarring alopecia 2 points
- Oral ulcers 2 points
- Subacute cutaneous or discoid lupus 4 points
- Acute cutaneous lupus 6 points

Arthritis Domain
- Synovitis in at least 2 joints and at least 30 min of morning stiffness 6 points

Neurologic Domain
- Delirium 2 points
- Psychosis 3 points
- Seizure 5 points

Serositis Domain
- Pleural or pericardial effusion 5 points
- Acute pericarditis 6 points
Clinical Domains

Hematologic Domain
- Leukopenia 4 points
- Thrombocytopenia 4 points
- Autoimmune hemolysis 4 points

Renal Domain
- Proteinuria >0.5g/24h 4 points
- Class II or V lupus nephritis 8 points
- Class III or IV lupus nephritis 10 points
Immunologic Domains

**Antiphospholipid antibody domain**
- IgG > 40 GPL 4 points
- Anti B2GP1 IgG > 40 4 points
- Lupus anticoagulant 4 points

**Complement Proteins domain**
- Low C3 or low C4 3 points
- Low C3 and low C4 4 points

**Highly specific antibodies domain**
- Anti – DS DNA antibody 6 points
- Anti – Smith antibody 6 points
Systemic

**CNS**
- seizures
- psychosis

**Cardiac**
- Libman-Sacks Endocarditis
- arrhythmia

**Renal**
- Normal
- Mesangial lupus nephritis
- Focal proliferative lupus nephritis
- Diffuse proliferative glomerulonephritis
- Membranous glomerulonephritis
- Sclerosing
Class of Lupus Nephritis
(2003 ISN/RPS Criteria)

- Class I  Minimal Mesangial
- Class II Mesangial Proliferative
- Class III  Focal (active and chronic, proliferative and sclerosing)
- Class IV  Diffuse  (active and chronic, proliferative and sclerosing, segmental and global)
- Class V  Membranous
- Class VI Advanced sclerosis
Treatment Guideline for Lupus Nephritis

- Patients with clinical evidence of active, previously untreated lupus nephritis should have a renal biopsy to classify the disease according to ISN/RPS criteria.
- All patients with lupus nephritis should receive background therapy with hydroxychloroquine, unless contraindicated.
- Glucocorticoids plus either cyclophosphamide intravenously or mycophenolate mofetil orally should be administered to patients with class III/IV disease; patients with class I/II nephritis do not require immunosuppressive therapy.
- Angiotensin-converting enzyme inhibitors or angiotensin-receptor blockers should be administered if proteinuria reaches or exceeds 0.5 g/day.
- Blood pressure should be maintained at or below 130/80 mm Hg.
Treatment Options for extra-renal SLE

- Symptomatic
- Hydroxychloroquine (Plaquenil)
- Chloroquine (Aralen)
- Azothiaprim (Imuran)
- Methotrexate
- Steroids
- Cyclophosphamide (Cytoxan)
- Mycophenolate mofetil (CellCept)
- Belimumab (Benlysta)
- Bone Marrow Transplant
Scleroderma

- Incidence: approximately 0.4-1/100,000
- Peak age: 30-55
- Female:Male = 7.5:1
Variants

- Localized
  - anticentromere antibody
  - Linear
  - morphea

- CREST

- Toxic

- Progressive Systemic Scleroderma
  - ANA
  - SCL-70 antibodies
Localized Scleroderma

- primarily in extremities
- no internal organ involvement
- usually does not require treatment or intervention
- includes linear scleroderma and morphea
Localized (Linear) Scleroderma
CREST (localized)

Requires 2 of 5

- Calcinosis
- Raynauds
- Esophageal Motility
- Scleroderma
- Telangiectasia
TOXIC SCLERODERMA

- Toxic Oil - rapeseed oil
- Eosinophilia myalgia syndrome - L-tryptophan (rash, fever, arthralgias)
- Diffuse fasciitis with eosinophilia (Shulman’s Syndrome)
  - no systemic features
  - usually follows exercise or trauma
  - mainly affects a single limb
Progressive Systemic Sclerosis

- Pulmonary Fibrosis
- Cardiac Fibrosis
- Raynauds
- Sicca Complex
- Renal
  - accelerated hypertension
  - renal crisis
Criteria (requires 9 points)

- Skin thickening of the fingers of both hands proximal to MCP joint (9 points)
- Skin thickening of the fingers distal to MCP (4 points) or puffy fingers (2 points)
- Telangiectasia (2 points)
- Nailfold capillaries (2 points)

- PAH or ILD (2 points)
- Raynaud’s (3 points)
- Autoantibodies (3 points)
  - Anticentromere
  - Anti-topoisomerase
  - Anti-RNA polymerase III
Treatment

- Mycophenolate mofetil (CellCept)
- Penicillamine (Cuprimine, Dpen)
- Steroids
- Methotrexate
- Cyclophosphamide
- Tacrolimus
- Thalidomide
- PAH
- Other Immunosuppressive Therapy
- Bone Marrow Transplant
IDIOPATHIC INFLAMMATORY MYOPATHIES

- Polymyositis
- Dermatomyositis
- Inclusion Body Myositis
- Malignancy Associated Myositis
- Juvenile Dermatomyositis
Variants

- Polymyositis
- Dermatomyositis
- Inclusion Body Myositis
- Malignancy Associated Myositis
- Pediatric Poly/Dermatomyositis
- Amyopathic Dermatomyositis
- Collagen Vascular Disease Associated
- Mixed Connective Tissue Disease
EULAR/ACR Criteria 2017

- **Probable IIM** (55% chance)
  - Score of 5.5 without biopsy
  - Score of 6.7 with biopsy

- **Definite IIM** (>90% chance)
  - Score of 7.5 without biopsy
  - Score of 8.7 with biopsy
IDIOPATHIC INFLAMMATORY MYOPATHIES (Reference)

2017 European League Against Rheumatism/American College of Rheumatology Classification Criteria for Adult and Juvenile Idiopathic Inflammatory Myopathies and Their Major Subgroups

ARTHritis & RHEumatology
Vol. 69, No. 12, December 2017, pp 2271–2282 DOI 10.1002/art.40320

https://www.rheumatology.org/Portals/0/Files/Classification-Criteria-Idiopathic-Inflammatory-Myopathies.pdf
Score points for the European League Against Rheumatism/American College of Rheumatology classification criteria for adult and juvenile idiopathic inflammatory myopathies to be used when no better explanation for the symptoms or signs exists

<table>
<thead>
<tr>
<th>Age of onset of first related symptoms:</th>
<th>No biopsy</th>
<th>Biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>18–40</td>
<td>1.3</td>
<td>1.5</td>
</tr>
<tr>
<td>≥40</td>
<td>2.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Muscle weakness</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Objective symmetric weakness, usually progressive, of proximal upper extremities</td>
<td>0.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Objective symmetric weakness, usually progressive, of proximal lower extremities</td>
<td>0.8</td>
<td>0.5</td>
</tr>
<tr>
<td>Neck flexors are relatively weaker than neck extensors</td>
<td>1.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Legs, proximal muscles are relatively weaker than distal muscles</td>
<td>0.9</td>
<td>1.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Skin manifestations:</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Heliotrope rash</td>
<td>3.1</td>
<td>3.2</td>
</tr>
<tr>
<td>Gottron’s papules</td>
<td>2.1</td>
<td>2.7</td>
</tr>
<tr>
<td>Gottron’s sign</td>
<td>3.3</td>
<td>3.7</td>
</tr>
</tbody>
</table>

| Other clinical manifestations | Dysphagia or esophageal dysmotility | 0.7 | 0.6 |

<table>
<thead>
<tr>
<th>Laboratory measurements</th>
<th>(Serum levels above upper limit of normal):</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti-Jo-1 (anti-histidyl-tRNA synthetase) autoantibody positivity</td>
<td>3.9</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Elevated serum levels of creatine kinase (CK)*</td>
<td>1.3</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Lactate dehydrogenase (LDH)</td>
<td>or</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Aspartate aminotransferase (ASAT/AST/SGOT)*</td>
<td>or</td>
<td>1.3</td>
<td>1.4</td>
</tr>
<tr>
<td>Alanine aminotransferase (ALAT/ALT/SGPT)*</td>
<td>or</td>
<td>1.3</td>
<td>1.4</td>
</tr>
</tbody>
</table>

| Muscle biopsy features | | |
|------------------------|---|
| Endomysial infiltration of mononuclear cells surrounding, but not invading, myofibres | 1.7 |
| Perimysial and/or perivascular infiltration of mononuclear cells | 1.2 |
| Perifascicular atrophy | 1.9 |
| Rimmed vacuoles | 3.1 |
POLYMYOSITIS

- Female : Male 2:1
- Incidence 0.5-8.4/million
- Peak ages
  - 10-15 - pediatric
  - 45-60 - adult
Polymyositis

- proximal muscle (hip and shoulder girdle) weakness
- weakness without pain
- no rash
- elevated CPK
Dermatomyositis

- Rash
  - heliotrope rash
  - Shawl sign
  - V - sign
  - mechanics hands
  - Gottrons papules

All other features of Polymyositis
Non Muscle Manifestations

- Calcinosi
- Interstitial Lung Disease
- Cardiac muscle
- Coronary artery disease (rare)
- Dysphagia
- Reflux (50%)
- Diarrhea, constipation, abdominal pain
- Pericarditis
Inclusion Body Myositis

- identical clinical features to Polymyositis/Dermatomyositis
- on electron microscopic evaluation of muscle biopsy specific inclusions are seen
- refractory to treatment
- familial
Malignancy Associated Myositis

- Clinically identical to Poly/Dermatomyositis
- Increasing likelihood with increasing age of patient
- More common in Dermatomyositis
- The most common malignancy for age is the most common seen
- Increased incidence of ovarian cancer
- Anti TIF1 antibody
Antisynthetase Syndrome

- 20% of polymyositis/Dermatomyositis patients
- More common in Polymyositis than Dermatomyositis

- MSA on lab
- Raynaud’s
- Interstitial Lung Disease
- Mechanics hands
- Fever
- Non erosive symmetric polyarthritis of the small joints
Signal Recognition Particle Antibody Associated Myopathy

- Associated with severe polymyositis and cardiac involvement
- Test positive for anti SRP antibodies
- Approximately 4% of cases of polymyositis
Amyopathic Dermatomyositis

- Typical skin lesions of Dermatomyositis
- No muscle weakness
- Normal CPK
- May have fatigue
- Due to abnormal ATP in muscles
Diagnosis

- Weakness
- Elevated CPK
- EMG/NCS
- Muscle Biopsy
- +/- Rash
- Lab
Antibody Testing

- **Myositis Specific Antibodies (MSA)**
  - Seen in 40% of cases
  - Associated with anti-synthetase syndrome
  - Anti RNA synthetase
    - Jo-1  20-30%
    - Anti PL-12
    - Anti-EJ
    - Anti – OJ
    - Anti – PL7
    - Anti – KS

- **Anti Signal Recognition Particle Antibody (Anti-SRP)**
  - Seen in 4% of patients
  - Associated with poor prognosis and Anti-SRP Myopathy
Antibody Testing

- **ANA**
  - Seen in 50-80%
  - Pattern
    - Homogeneous
    - Speckled
    - Nucleolar

- **Amyopathic DM**
  - Anti – CADM 140

- **Juvenile**
  - Anti – MJ antibody

- **Myositis associated antibodies (MAA)**
  - Seen in 20-50% of cases
  - Anti – SSA
  - Anti – PM

- **Overlap**
  - Anti – RNP
  - Anti – Ku
Antibody Testing

Chromodomain helicase DNA binding proteins 3 and 4

– Dermatomyositis
Treatment

- varies with disease type
- Prednisone
- Methotrexate
- other immunosuppressive therapy
- Physical therapy
Differential Diagnosis

- Eosinophilic Myositis
- Focal Myositis
- Giant Cell Myositis
- Drug induced myositis/myopathy
- Infectious Myositis
- Metabolic Myopathy
### POLYMYALGIA RHEUMATICA

<table>
<thead>
<tr>
<th>Criteria (4 points)</th>
<th>Without Ultrasound</th>
<th>With Ultrasound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning stiffness</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hip pain/decreased ROM</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Neg. RF or anti CCP</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Absence of other joint pain</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Ultrasound (subdeltoid bursitis, biceps tenosynovitis, glenohumoral synovitis)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Required Criteria** – Elevated ESR/CRP, Age >50, Shoulder girdle muscle pain
Contact Information

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