INFLAMMATORY MYOPATHIES

Idiopathic inflammatory myopathies (IIM)

- Multiple disorders involving autoimmune inflammation, injury of skeletal muscles. Most commonly include **polymyositis**, **dermatomyositis** (**juvenile & adult forms)**, and **inclusion body myositis.**
- Rare diseases (PM >>DM).
- 4X more common in blacks. 2X more common in females.
- Can occur at any age: PM 50 -60 years, DM has two peaks: 5 - 15 years & 45 - 65 years, and IBM >50.
- HLA association
  1) DM: HLA-D**R**B1 and HLA-D**Q**B1
  2) JDM: HLA-DQA1

- Associated with other autoimmune diseases (e.g., scleroderma, SLE, RA, SS, PAN).
- Dermatomyositis mediated by humoral immune response (B-cells and CD4+ helper T-cells) while polymyositis and inclusion body myositis is mediated by cellular immune response (CD8+ T-cells and macrophages).

- Skin manifestations are seen in **dermatomyositis** and include **Heliotrope rash** (purple-pink eyelids +/- periorbital edema), **Gottron papules** (scaly red plaques of knuckles, elbow, knees), V-shaped rash on chest, **Shawl rash** on the back, rash on the malar areas (w/**out** sparing nasolabial folds and forehead), periungual telangiectasia, mechanic's hand**, Holster sign** (rash over the lateral hip),
- Juvenile dermatomyositis is associated with **calcinosis** (deposition of calcium in skin), while adult dermatomyositis is associated with **malignancy**, treating malignancy may cure myositis (e.g., ovarian cancer, breast cancer, colon cancer, and melanoma).

- Muscle weakness of both **dermatomyositis** and **polymyositis** is **insidious** (starts over 3-6 months), **symmetrical**, and affects the **proximal** muscles around the shoulders, hips, thighs, trunk, and neck especially in the early morning (morning stiffness). On the other hand, muscle weakness of IBM is a **asymmetric,** and often involves **distal** muscles (e.g., quadriceps & arm flexors) +/- proximal muscles.

- Difficulty getting up or frequent falls + weak grip (distal muscle involvement) = **inclusion body myositis.**
- Difficulty getting/ standing up or climbing stairs or raising the head off the pillow + minimal rheumatoid-like arthritis + skin manifestations = **dermatomyositis**.
- Difficulty getting/ standing up or climbing stairs or raising the head off the pillow + minimal rheumatoid-like arthritis + mild myalgia + impaired chewing or dysphagia = **polymyositis**.

- Complications include dysphagia (esp. in PM, can cause aspiration → chemical pneumonitis), pulmonary involvement (interstitial lung disease and/or respiratory muscle weakness), and cardiovascular involvement (arrhythmias, myocarditis, pericardial effusions).

- Dx.
  - First test to do is EMG (to exclude nerve conduction issues like MS).
  - Lab findings:

** ↑ muscle enzymes (CK, AST, ALT, LDH, aldolase).

CK correlate w/ disease activity. On the other hand, ESR & CRP do not correlate w/ disease activity or response to Tx.

Causes of ↑CK:

1) Skeletal muscle injury (strenuous exercise, trauma, EMG, surgery, diseases like myositis, metabolic diseases (e.g., hypothyroidism, hypokalemia), and muscular dystrophies, things that cause rhabdomyolysis like alcohol abuse and certain medicines (**colchicine, steroids, statins**)).
2) Myocardial infarction.
3) Normal (certain ethnic groups, increased muscle mass or due to a technical artefact).

** ↑ autoantibodies

1. Polymyositis (antinuclear antibodies (ANA), anti- aminoacyl-tRNA synthetase antibodies (anti-Jo-1), anti-SRP (poor prognosis; cardiac involvement and resistance to Tx.))
2. Dermatomyositis (ANA, anti-Mi-2 antibodies (better prognosis), anti-Jo-1, anti-SRP (poor prognosis; cardiac involvement and resistance to Tx.))

Anti-synthetase syndrome is an AU condition, characterized by the presence of anti-Jo-1 antibodies along with **interstitial lung disease, myositis, Raynaud's phenomenon,** and **arthritis** +/- **fever.**

- Muscle bx. (histopathology, gives the definitive dx.):

1. Dermatomyositis: B-cells and CD4+ T-cells infiltrating the perivascular, and the perimysial spaces causing perifascicular atrophy (humoral immune response).
2. Polymyositis: CD8+ T-cells and macrophages infiltrating the endomysial space (local cellular immune response).
3. Inclusion body myositis: CD8+ T-cells and macrophages infiltrating the endomysial space + intracytoplasmic vacuoles rimmed by basophilic material + small eosinophilic intracytoplasmic + nuclear inclusions (protein depositions).

- Tx. (only for PM and DM, IBM has no tx.)
  1) Corticosteroids (e.g., glucocorticoid)
  2) immunosuppressive agents (e.g., MTX, azathioprine)
     -Failure to even respond to high-dose steroids
     -Initial improvement w/ steroids but then the disease persists
     -Inability to taper the steroids without recurrence
     -Severe steroid side-effects.
- All patients >50 years of age should screen for cancers (i.e., they should have CXR (lung cancer), CT scans, mammography (F), testicular examination (M), FOBT, colonoscopy, and gastroscopy).
