Proximal Weakness with a Poor Prognosis in a Young Adult

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Introduction

Idiopathic inflammatory myopathies (IIM), also referred to as immune-mediated myopathies, are a group of disorders characterized by progressive muscle weakness and inflammation of muscle tissue. The prevalence of IIMs is 9-14 cases per 100,000 people and can affect patients of any age group, including juveniles[3]. The major subtypes of IIMs include dermatomyositis, polymyositis, inclusion body myositis, antisynthetase syndrome, and immune-mediated necrotizing myopathy. These individual disorders can be distinguished based on accompanying clinical manifestations, muscle biopsy, and specific serologic findings.

Case Presentation

Brief History:

A 19 year-old female with no significant past medical history presented after a ground-level fall. She reported proximal muscle weakness over the past 8 months with significant worsening over the past few weeks. She had to lift her legs up with her arms to get into the bathtub and out of cars. She also noticed difficulty keeping her arms up to wash her hair.

Physical Exam:

Vitals: BP 106/72, HR 94, T 36.9C, RR 20, SpO2 100% on RA
Pulm: Clear to auscultation b/l
CV: RRR. No murmurs or rubs.
Skin: No rashes or lesions.
MSK: No tenderness to palpation of large muscle groups, no synovitis or joint effusions.
Neuro: Strength 3/5 in bilateral shoulder abductors, hip flexors, hip extensors and 4/5 in knee flexion and extension

Notable Labs:

ALT 123, AST 136, CPK 6,636, ESR 16, CRP <2.9

Imaging/Studies:

CT C/A/P: No evidence of solid malignancy.
MRI thigh b/l: Extensive symmetric myositis affecting the pelvic and thigh musculature. The findings are compatible with an inflammatory myositis such as dermatomyositis.
Spirometry: Mild obstructive lung disease.

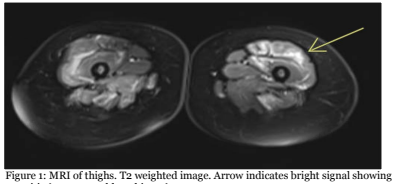

Figure 1: MRI of thighs. T2 weighted image. Arrow indicates bright signal showing myositis (area amenable to biopsy).

Clinical Course

- Hospital day 3: Worsening weakness and new dysphagia; started prednisone 60mg daily.
- HD 4: Muscle biopsy obtained
- HD 6: Discharged on prednisone 60mg daily pending results of biopsy and myositis panel. Minimal improvement in functional status.
- +7-8 days: Final pathology and myositis panel results (positive anti-SRP Ab). Diagnosed with immune-mediated necrotizing myopathy.
- +25 days: No improvement (or worsening) in neurologic status. Added azathioprine 25mg BID
- +43 days: No change in status; Started IVIG 0.5mg/kg/week x12 doses. Stopped prednisone.
- +57 days: Stopped azathioprine.
- +70 days: Mild improvement in strength after initial doses of IVIG. Started rituximab 1g x2 doses (2 weeks apart) and mycophenolate 100mg BID.
- Currently, patient remains debilitated and unable to return to work. She ambulates with a walker.

Pathology & Images

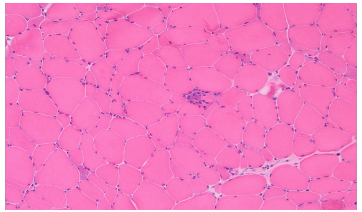

Figure 2: Muscle biopsy. 100x H&E showing significant fiber size variability and fibers undergoing necrosis with notable lack of inflammation. Photo and annotation credit: Aaron Halfpenny, D.O.

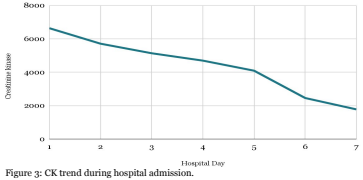

Figure 3: CK trend during hospital admission.

Table 1: Myositis panel interpretation. Myositis-specific antibodies (MSA) can help establish a diagnosis and prognosis. Myositis-associated antibodies (MAA) may be found in patients with connective tissue disease and are not specific for myositis.

	Myositis-Specific Antibody	Myositis-Associated Antibody
SSA 52 (Ro)		X
Smith/RNP		X
Jo-1	X	
PL-12	X	
EJ	X	
OJ	X	
SRP (indicates poor prognosis)	**X**	
Ku		X
PM/SCL 100		X
Fibrillarin		X
Mi-2	X	
P155/140	X	
TIF-1	X	
SAE1	X	
MDA5	X	
NSP2	X	

Discussion

Immune-mediated necrotizing myopathy (IMNM) clinically resembles polymyositis, however muscle biopsy demonstrates less (if any) inflammatory infiltrate and greater extent of necrosis. The anti-HMGCR autoantibody, typically associated with a history of statin use, is one subtype of this disorder. Another subtype is associated with anti-SRP autoantibodies; this subgroup tends to affect younger patients and more frequently has extramuscular manifestations, such as dysphagia, interstitial lung disease or cardiac involvement[1,2]. Roughly 10% of IIM cases have either anti-SRP or anti-HMGCR antibodies. Unfortunately, muscle prognosis is worse in IMNM than in other types of myositis - about half of patients continue to have significant weakness after two years of treatment and younger age seems to be most closely associated with worse prognosis[3].

Take Home Points

- IMNM is one of the less common subtypes of the idiopathic inflammatory myopathies.
- Myositis panel antibodies help inform prognosis and treatment plan. Anti-SRP patients have a poor prognosis with frequent relapse and typically require combined immunotherapy[3]
- Anti-SRP patients can develop interstitial lung disease and myocarditis and should be screened accordingly[3]

References

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