Statin Induced Necrotizing Autoimmune Myopathy

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Case

A 67-year-old male presented with a 2-week complaint of muscle pain and weakness in his proximal muscle groups, shortness of breath, and a fever. Pertinent past medical history included hyperlipidemia managed with atorvastatin for 11 months.

Lab work showed elevated liver function tests (AST 171 units/L, ALT 186 units/L) and elevated creatine kinase (CK) (1110 units/L). Initial treatment for rhabdomyolysis including fluids and discontinuation of atorvastatin provided temporary symptomatic improvement, followed by recurrence as well as increasing CK levels (3,000-4,000 units/L) over the following month.

Antibody testing showed a positive response to HMG-CoA reductase (HMGCR) (85 units, normal <20), indicating statin induced necrotizing autoimmune myopathy (SINAM). Treatment with prednisone 40mg daily led to improvement of symptoms and down trending CK levels.

Stepwise reduction of prednisone over the following 4 months resulted in no recurrence of disease and full return of strength and function.

Discussion

Statins are the gold standard in the management of hyperlipidemia. They work by inhibiting HMGCR, an essential enzyme in cholesterol synthesis. While usually well tolerated, their chief side effect is myalgia, which can present on a spectrum. On the advanced end, 2 per 100,000 individuals starting statin treatment will develop autoantibodies to HMGCR in a condition called SINAM. A distinguishing feature of SINAM is persistent myalgia and elevated CK even after statin discontinuation[2].

Given its rarity, our workup started by excluding more common etiologies. Alternative diagnoses considered included lesser forms of statin-induced-myalgia, viral infections (e.g. COVID-19), inflammatory myopathies (e.g. polymyositis), and neuropathic etiologies[1].

Elevated HMGCR antibody testing is considered the gold standard in SINAM diagnosis[3].
While studies indicate a muscle biopsy would show a necrotic myofibril pattern, antibody testing can help avoid this invasive procedure. Prompt treatment consisting of corticosteroids +/- immunosuppressants can help prevent debilitating muscle necrosis.

Conclusion

Consideration of SINAM is appropriate in any patient with a history of statin use presenting with proximal muscle pain, weakness and elevated CK levels that persist after statin discontinuation.

Key facts about SINAM

- Rare side effect of statin medications (2/100,000)
- Persistent myalgias and elevated CK levels after statin discontinuation
- HMGCR antibody testing is the gold standard for diagnosis
- Treatment includes corticosteroids +/- immunosuppressants

References

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