



# CASE REPORT

## Fish Oil Associated Myopathy

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### Introduction

Myopathy affects 1-5% of patients prescribed statin medications<sup>1</sup> and less than 1% of patients prescribed fibric acid derivatives.<sup>2</sup> Fish oil has been used to alleviate statin-induced myopathy. No known cases of fish oil-induced myopathy have been reported.<sup>3</sup> Our case of fish oil-induced myopathy was confirmed by repeated symptomatology and elevation in creatine kinase with reintroduction of fish oil supplement for hypertriglyceridemia treatment.

### Case Report

A 47-year-old male was referred to an endocrinology clinic for management of hypertriglyceridemia. He felt well and had no history of pancreatitis or xanthomata. His past medical history was significant for anxiety, depression, gastroesophageal reflux disease, and hypertension. Medications included alprazolam, sertraline, omeprazole, and amlodipine/benazepril.

Fasting measurement of serum lipids revealed a total cholesterol level of 195 mg/dL, triglyceride level of 722 mg/dl, and high-density lipoprotein level of 34 mg/dL. His low-density lipoprotein level was not calculated. Thyroid stimulating hormone was 1.28 uIU/mL (reference range 0.40-4.10). A two-hour 75 gram oral glucose tolerance test revealed a fasting serum glucose of 88 mg/dl and a two-hour value of

102 mg/dL. Serum electrolytes and a complete blood count were unremarkable.

The patient was placed on generic fish oil at a dose of 2 grams orally twice daily along with fenofibrate 145 mg orally daily. After two weeks, he reported muscle pain in his back and thighs bilaterally. The discomfort was not associated with increased physical activity. His serum creatinine kinase (CK) level was elevated at 340 U/L (reference range 32-237). Serum electrolytes were unremarkable. The fish oil and fenofibrate were discontinued. His muscle discomfort resolved.

Fish oil was reintroduced three weeks later at 2 grams orally twice daily. Fenofibrate was not restarted. Within two weeks, his muscle pain returned. Serum creatinine kinase level again was elevated at 268 U/L. A fasting lipid panel revealed a total cholesterol level of 259 mg/dL, triglycerides of 1180 mg/dL, and a high-density lipoprotein level of 34 mg/dL. The fish oil was discontinued, and his muscle symptoms resolved. Serum creatine kinase level one month later was normal at 159 U/L.

### Discussion

The mechanism of myopathy associated with statins and fibric acid derivatives is poorly understood. Possible mechanisms for statins include reduced levels of ubiquinone,

reduced guanosine triphosphate (GTP)-binding regulatory proteins, or altered phospholipid metabolism.<sup>1</sup> Muscle toxicity has been associated with increased systemic or tissue statin levels, affected by gene mutations<sup>4</sup>, drug dose, co-administration of gemfibrozil, and grapefruit<sup>1</sup>.

The proposed mechanisms of fibrate-associated myopathy are even less clear, but also appear to involve genetic predisposition, drug interactions, and medication dose.<sup>2</sup> The etiologies of muscle damage with statins and fibrates are unlikely to be present with fish oil, whose proposed mechanisms of action differ significantly from either statins or fibrates.<sup>5</sup> The presence of diabetes, renal failure, and hypothyroidism can contribute to myopathy, but none were present in this patient.

This case demonstrated true myopathy with muscle pain and an elevation in CK

associated with administration of fish oil. The initial symptoms resolved with discontinuation of fish oil and fenofibrate, but muscle pain and an elevated CK returned upon re-introduction of fish oil alone. Both resolved within one month of discontinuing the fish oil. A contributing factor may have been the type of fish oil used, as it was marketed as a nutritional supplement, not as a pharmaceutical-grade product.

### Conclusion

Fish oil can be associated with myopathy either alone or in combination with fenofibrate. If signs and symptoms of myopathy do not resolve with discontinuation of other antihyperlipidemic agents, discontinuation of fish oil should be considered.

### References

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