

# Acetylcholine receptor antibody positive generalized *Myasthenia gravis* in association with Primary Biliary Cirrhosis

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## ABSTRACT

Primary Biliary Cirrhosis and *Myasthenia Gravis* are both autoimmune conditions, however, there are only rare case reports of their association. This is a case report of acetylcholine receptor antibody positive generalized myasthenia gravis in a female patient with antimitochondrial antibody positive, liver biopsy-confirmed primary biliary cirrhosis.

**Key words.** Primary Biliary Cirrhosis. *Myasthenia gravis*. Acetylcholine receptor antibody.

## INTRODUCTION

We present a case report of a 59 year old women with concurrent Primary Biliary Cirrhosis (PBC) and *Myasthenia Gravis* (MG) who was referred to our GI service for management of her PBC during an admission for a *Myasthenia* exacerbation. Both MG and PBC are autoimmune disease which may present initially with non specific fatigue. There are only limited case reports of patients with both MG and PBC.<sup>1-7</sup>

## CASE

A 59 year old Caucasian woman with a 7 year history of PBC and a 2 year history of MG was transferred to our tertiary center for management of a MG exacerbation. She initially was diagnosed with PBC when a cholestatic pattern of elevation of liver enzymes was detected on blood work drawn for an unrelated medical concern. At that time her only other medical history was hypertension and her medications included candesartan and milk thistle. She was

asymptomatic with no pruritis, fatigue nor jaundice. However, repeat liver enzymes showed GGT 150-350, AST and ALT one and a half the upper limit of normal. An antimitochondrial antibody (AMA) titer was greater than 1 in 160. The patient had a family history of cirrhosis (two uncles) however these cases had been attributed to alcohol. A liver biopsy showed expansion of portal areas with an inflammatory cell infiltrate and bile duct injury with inflammatory cells extending between the epithelial cells and some degree of hypereosinophilia consistent with a diagnosis of primary biliary cirrhosis. The patient was treated with ursodeoxycholic acid 500 mg twice daily.

This patient had long standing generalised fatigue with a previous diagnosis of possible Sjogren's or Sicca syndrome. However her fatigue progressed and she subsequently developed symptoms of bulbar and limb weakness. She was assessed by the neurology service and following electrophysiology studies confirming a decremental response on repetitive nerve simulation and positive jitter studies, a diagnosis of acetylcholine receptor antibody positive generalized MG was made. Her symptoms initially responded well to pyridostigmine bromide (Mestinon, Valeant Canada Ltd, Montreal QC) until one week prior to her admission when she developed an acute increase in weakness associated with speech, swallowing and breathing difficulty. She was transferred to our tertiary care center for management of a *Myasthenia* crisis. Her acute weakness improved with commencing corticosteroids, cyclosporine and a

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course of plasma exchange. Her liver biochemistry became mildly abnormal during this period but normalized afterwards. She is currently awaiting thymectomy.

## DISCUSSION

PBC is a condition characterized by autoimmune destruction of the intrahepatic bile ducts. It is typically seen in women more often than men and may be associated with other autoimmune diseases. At diagnosis it is often asymptomatic but symptoms may include fatigue, pruritis and jaundice. Rarely patients may also have symptoms of fat malabsorption, xanthelasmas or xanthomas. Progressive disease results in hepatic failure.<sup>8</sup>

MG is an autoimmune disorder characterized by antibodies targeted against acetylcholine receptors of the neuromuscular junction. Typical presenting symptoms include fluctuating weakness and fatigue, often first affecting the ocular or bulbar muscles with variable involvement of the limb muscles. Exacerbations may occur secondary to a variety of medical stressors and may lead to a *Myasthenia* crisis which is defined by the need for respiratory support.<sup>9</sup>

Fatigue is a common symptom of PBC and MG. The etiology of fatigue in PBC is not entirely understood. While both conditions are known to be associated with other autoimmune diseases there are only a few case reports describing MG in patients with PBC.<sup>1-7</sup> Earlier cases of MG developing in a patient with PBC were attributed to the use of penicillamine as treatment for their PBC,<sup>3</sup> with speculation that penicillamine may have been a causal factor. There are also case reports of the detection of acetylcholine receptor antibodies in patients with PBC without concomitant MG.<sup>10-11</sup> Given the non-specificity of fatigue as a medical complaint and the potential association between these conditions it is

important to consider the diagnosis of MG in a patient with PBC particularly if there is a history of fatigability and cranial nerve/bulbar weakness. The association of MG and PBC may be under-recognized, as well as under-reported, but should be considered in patients with PBC presenting with fatigue, weakness and other non-specific neurologic symptoms.

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