
Myasthenia Gravis: Challenge to Dental Profession

B Rai

Citation

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Abstract

Myasthenia gravis is a chronic neuromuscular disease characterized by muscular weakness and fatigability. Myasthenia gravis is an autoimmune disease that requires special considerations for dental treatment. Dentists are in unique position to monitor patients for potential emergence or recurrence of MG. The purpose of this article was to review and summarize the diagnosis, signs and symptoms and treatment of MG, suggested treatment modification potential complications and highlighting the role of dental profession in process of diagnosis and management.

INTRODUCTION

Myasthenia gravis (MG) is a disease characterized by progressive muscular weakness on exertion, secondary to a disorder at the neuromuscular junction. Myasthenia gravis, a chronic neuromuscular disease, was first described clinically by Willis¹, over 400 year ago. The discovery of a decrease in acetylcholine receptors at neuromuscular functions in patients with MG² has led to remarkable progress in understanding the nature of this disease, thus resulting in better diagnosis and improved treatment strategy. This article reviews the considerations for dental treatment of the myasthenia gravis patient.

ETIOLOGY

The etiology is unknown, although there is an increased incidence in patients with thymoma and other autoimmune and related disorder.^{3,4,5} Muscular weakness and fatigue, characteristic of MG, may be associated with an antibody mediated auto immune attack directed toward the acetylcholine receptors at the neuromuscular junctions.⁶ Auto-antibodies reduce the availability of the target antigen, the nicotine acetylcholine receptors. This results in an usually limited duration of the neural impulses and small amplitude of the motor unit potential.⁷

Most report that myasthenia gravis patients who undergo thymectomy are more likely to be asymptomatic and achieve a medication free remission. All current studies have serious methodological flaws that prevent definitive conclusion regarding the benefit of thymectomy in MG.⁹ Short term immuno therapy such as plasmapheresis and interavenous

immune globulin, are also considered for rapid improvement of a complex period of myasthenia crisis.⁶

DIAGNOSIS, PROGNOSIS AND TREATMENT

Initial signs of this disease commonly occur in areas innervated by the cranial nerves. Patients present with ptosis, diplopia, difficulty in chewing or swallowing, respiratory difficulties, limb weakness, or some combination of these problems. In some patients, the disease remains confined to the eye muscles, but in most cases, it progresses to other cranial nerve as well as to the shoulders and limbs.

Diagnosis is largely based on a characteristic history of fluctuating diplopia, ptosis, dysarthria, and limb weakness.⁸ Dysphagia, dyspnea and head droop may also be present. Affected muscles are fatigable and symptoms improve with rest.

Immunosuppressive therapy, mainly steroids, may be used to treat MG patients who do not response to high doses of anticholinesterase agents. Since temporary deterioration is possible after initial treatment with high doses of steroids, the risk of exacerbation could be minimized by gradually increasing the corticosteroid dosage.¹⁰ Prednisone long/day is usually administered by gradually increasing the dose up to 50 mg/day over 2 to 3 weeks, which then can be readjusted according to the treatment outcome. Immuno suppressive steroid sparing agents can be used to minimize the adverse effects of the high doses of steroids.¹¹ At least 4% of patients present with difficulty chewing and a fatigable reduction in biting force. Chewing difficulty can develop before other symptoms providing an opportunity for early diagnosis and

treatment., Hence, dentists are in an opportune position to pick up early signs of MG, especially those involving the head, neck and oro-pharyngeal regions and can significantly benefit patients by being familiar with this disease.

Myasthenia gravis is no longer considered a terminal disease, and with suitable optimal medical care, the mortality rate is low.⁶ When MG is left untreated, the 10-year mortality rate ranges from 20% to 30% when associated with athymema, particularly in older patients, MG has poor prognosis.¹²

ORAL CONSIDERATIONS

Oral and facial signs are an important component of the clinical picture of MG. The facial muscles are commonly involved, giving the patient an immobile and expressionless appearance. Muscular weakness may impair the patient's ability to suck, swallow and chew.^{3,4} This can result in a marked reduction in function in well managed patient.⁵ Patients with bulbar MG have poor masticatory performance,¹³ similar to patients with progressive cerebral palsy¹⁴ dystrophy¹⁵.

A furrowed, flaccid clinical appearance of the tongue may be seen due to lipomatous atrophy.¹⁶ Chronic mucocutaneous candidiasis may result from dysfunctional cell due to thymoma.¹⁷

ROLE OF DENTIST

This may develop life threatening if a significant risk of aspiration develops,⁵ although this severity of illness is often accompanied by more serious involvement of the respiratory muscles requiring intubation and ventilatory support in hospital setting.⁵ Dentists should be prepared to the patients managing physician, particularly if progression of symptoms are noted, so that appropriate changes in medications can be made. Temporal or dentists should be aware that alteration of facial expression, chewing and swallowing difficulty and weakness including dysarthria, dyspnea, diplopia and dysphagia may be due to MG particularly if the weakness becomes worse the use. This finding is especially important if the patient reports ptosis, diplopia or if there is a history of thymoma or previous MG.

SPECIAL CONSIDERATIONS FOR DENTAL TREATMENT

A unique challenge to the dentists is the provision of routine dental treatment to an MG patient. Communication between patient, neurologist, and dentist is necessary to avoid

complications. Prior to treating any patient with a history of MG a thorough review of symptoms should be performed as well as an assessment of the patient's ability to swallow and speak normally. The amount of time of the patient and look up before ptosis and the length of time the patient can maintain with outstretched arms are a quick clinical measure of the severity of symptoms,¹⁸ and should be recorded in the chart regularly. Recent changes in the severity of symptoms should be reported to the patient's physician.

Multiple, short early morning appointments should be scheduled to avoid daily added muscle weakness and to take advantage of the typically greater muscular strength noted during the morning hours.¹⁹ Oral anticholinesterase agents should be administered 1.5 hours before dental treatment to achieve maximal effect during the dental procedures.¹³ The use of bite blocks, rest periods and other such approaches should also be considered. Nitrous oxide oxygen sedation may reduce stress and anxiety associated with dental treatment. Mostly patients will be taking corticosteroids, cholinesterase inhibitors, or both. Patients on long term steroid therapy should be considered immunocompromised and risk of different disorder¹⁸ all of which may contribute to a myasthenic crisis. A cholinergic crisis is a serious event in which respiratory muscles are involved and cause airway plugging and atelectasis.²⁰ Rubber dam should be used with caution and oral secretions need to be managed. NSAIDs are a good choice for analgesia.³ When severe pain is anticipated opioids can be prescribed for short term after consultation with physician.²¹ Anticonvulsants and aminoglycosides should be avoided in patients with MG.²¹ Amide type local anesthetics, such as lidocaine or mepivacaine, can be administered safely.¹³ Local anesthetics administered using the intra ligamentary or intrapulpal techniques should be considered to minimize doses of the drug when possible.²² Myasthenia gravis is a serious disease that requires specific treatment modifications in order to avoid exacerbation even in well controlled patients. Dentist should be familiar with signs of MG.

The longitudinal studies are needed to establish a reliable guideline for dental treatment of MG patients.

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Author Information

Balwant Rai, BDS