Pre-operative Botulinum Toxin Injection for Movement Disorder-induced Cervical Spondylosis

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Introduction

Movement disorder includes a variety of disorders such as cervical dystonia (also known as spasmodic torticollis) athetoid cerebral palsy3, and Tourette's syndrome.These patients display unique, unusual movements that are repetitive, and may include involuntary cervical motion, which has been well established to cause cervical radiculopathy, myelopathy or both.The findings of this study demonstrated that neurological and orthopedic complications in this unique group of patients can be effectively managed with the use of botulinum toxin injection, although the application of our therapeutic strategy during the pre- and post-operative periods posed a considerable challenge. The literature on movement disorders is discussed herein.

Methods

In this retrospective study, there were 6 patients during the period from 2003 to 2010 who suffered from cervical spondylosis secondary to movement disorder. Each patient received botulinum toxin injection one week before operation. In our protocol, botulinum toxin was injected at both sides of sternocleidomastoid, trapezius, splenius capitis and levator scapulae one week prior to surgery.

Results

All the patients were assessed preoperatively by neurologists.The surgical procedures were anterior cervical discectomies and interbody fusion plus segmental fixation. None of our patients underwent posterior decompression/fusion. The most common levels that needed decompression were C3-4 and C4-5. At the mean follow-up of 56.5 months, all patients showed an improvement in their daily activities, and the average percentage improvement was 41% (according to the modified Rankin Scale scores). Cervical spine X-ray series showed no evidence of implant failure in any of the patients.

Conclusions

Movement disorders cause chronic, repetitive and involuntary neck movements that can initiate degenerative cervical spine disease. The most frequently involved levels are C3-4 and C4-5. Surgical decompression and rigid internal fi xation are strongly recommended. Intramuscular injection of botulinum toxin aids post-operative immobilization of the neck and should be used as an important adjunct in the treatment of this disorder. These patients need to be closely followed because they are at risk of developing adjacent segmental degeneration.

Learning Objectives

The purpose of this study was to investigate the management of neurological and orthopedic complications in patients with movement disorder induced cervical spondylosis by botulinum toxin injection to provide immobilization of neck.

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