

Anterior Scalene Block Alleviates Dyspnea: a case report



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INTRODUCTION

We present an unusual case of a patient with suspected neurogenic thoracic outlet syndrome (nTOS) with associated dyspnea, whose dyspneic symptoms were nearly completely alleviated after local anesthetic block of the left anterior scalene muscle (AScm). To our knowledge, this is the first known case in the literature of dyspnea as a symptom of nTOS treated with local anesthetic injection of the AScm.

CASE PRESENTATION

A 69-year-old retired female (228 lb, BMI 34.7) with history of PSVT and OSA presented with 3 years of left upper chest and neck pain with associated left arm paresthesias and shortness of breath, most noticeably when raising the left arm overhead. Extensive work-up by cardiology and pulmonology was unremarkable other than OSA, for which she uses CPAP at night. The patient managed her pain with gabapentin 100 mg nightly and celecoxib 100 mg daily. She was subsequently referred to pain management for work-up of possible neurogenic thoracic outlet syndrome (nTOS). On exam, the Roos stress test provoked chest pain and dyspnea at 21 seconds. Palpation of both the left scalene and supraclavicular regions led to dyspnea without pain.

TREATMENT AND FOLLOW-UP

Given suspicion for nTOS, she underwent diagnostic **left anterior scalene muscle (AScm) injection with 0.5cc of 0.25% bupivacaine under CT-guidance**. The patient experienced nearly 100% pain relief in the left arm at one hour post-procedure and obtained 95% relief of dyspnea for 24 hours. Considering the success of the diagnostic block, a follow-up **AScm injection with onabotulinumtoxinA** was performed. Following onabotulinumtoxinA injection, the patient obtained 3 months of upper chest pain relief and greater than 50% improvement of her dyspnea. She reported a significant improvement in her functional status that allowed her to effectively engage with hobbies and housework.

Consider anterior scalene block and subsequent onabotulinumtoxinA injection for dyspnea treatment in neurogenic thoracic outlet syndrome.

DISCUSSION

Dyspnea as a symptom of nTOS is not documented in the literature. Few case reports reported tachycardia as an nTOS symptom, one of which demonstrated improvement after scalenectomy and proposed that stellate postganglionic efferent sympathetic fibers were compressed by the AScm given the sympathetic trunk's close proximity. Here, we propose a similar, but temporary sympathectomy with injection of local anesthetic to the AScm to decompress sympathetic fibers and cause potential improvement in the patient's PSVT - a condition known to cause dyspnea. Stellate ganglion sympathectomy has shown to alleviate dyspnea in other conditions. The vagus nerve's proximity to AScm must also be considered. Vagal dysfunction may increase mucus secretion and bronchial muscle contraction, contributing to dyspnea. Lastly, the phrenic nerve lies anterior to the AScm and may cause diaphragmatic paralysis or weakness if compressed.

We present one of the first cases in the literature of dyspnea as a symptom of nTOS with relief of dyspnea from injection of local anesthetic and subsequent onabotulinumtoxinA to the AScm. Anesthetic blockade and subsequent onabotulinumtoxinA injection may be considered in these patients as a treatment option.

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