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The Botulinum Toxin Injection as a Treatment for Complex Regional Pain Syndrome

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Introduction

Pain associated with complex regional pain syndrome (CRPS) is frequently excruciating and intractable. Sensitization of the nociceptive system, both peripherally and centrally, is believed to be a key pathogenic process. Botulinum toxin (BT) which has relaxing effect on skeletal muscles is widely used for the symptomatic relief of spasticity, dystonia, and other movement disorders. Recently, many researches are reporting that BT seems to have an anti-nociceptive action that is independent of its muscle relaxing action and may be due to inhibition of central and peripheral sensitization. So we hypothesized that BT may be a helpful to intractable CRPS related pain

Case report

A 51 years old man with CRPS was referred to our department about right calf pain. Although he had spinal cord stimulators on cervical and thoracic spine, taking morphine injection three times a week, and also did multiple trigger point injections and sympathetic ganglion blocks on his lumbar spine, pain continues. Severity of pain was about 8 by numerical rating system (NRS) for pain. After referred to us, we assumed that his right calf pain can be improved by intramuscular BT injection. So we did BT injection on right gastrocnemius [35IU] and soleus [15IU] with L5 dermatome subcutaneous BT injection [50IU]. After injection, right calf pain was improved, from 8 to 4 by NRS. Decrease of pain maintained for 4 months.

Discussion

CRPS is an incompletely understood, frequently devastating condition characterized by severe neuropathic pain. It is believed that CRPS can produce neuropathic pain by peripheral and central sensitization. There are several conventional therapies for CRPS, from physical therapy and oral medications to invasive therapy like sympathetic blockade, spinal cord stimulation and surgical sympathectomy. Although there is many clinical options, CRPS related pain is difficult to treat, and the natural history of CRPS is marked by unremitting worsening of the pain. BT is commonly used for movement disorders. Recently many studies are reporting that BT seems to have an early anti-nociceptive by several mechanisms including muscle relaxation, sensitization of c-fiber nociceptor,

decreasing release of neurotransmitters including substance p, calcitonin gene-related peptide, and glutamate which cause local blood flow and blood vessel leakage leading to edema and pain. In this case report, patients have intractable calf pain despite various medications, injections and spinal cord stimulation. So we did BT injection via intramuscular and subcutaneous. After injection pain reduced from 8 to 4 by NRS and unlike other methods, decrease of pain maintained for 4 months. And also there were no adverse effects. According to this case, we report that BT injection can be helpful to intractable CPRS related pain.