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Lidocaine and Botulinum Injections at Tender Points of Fibromyalgia May Result in Immediate and Long-term Pain Relief: A Case Report

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Background: Pharmacological treatment alone is found inadequate for patients of fibromyalgia (FM) syndrome. For prolonged pain relief, either injections of lidocaine or botulinum toxin A were previously injected at tender points of FM with varied results.

Case Report: We present a case where a mixture of lidocaine and botulinum A was injected at tender points in a young woman patient with FM, which resulted in immediate and extended pain relief with improvement in quality of life.

Conclusions: Mixture of lidocaine and botulinum toxin injections at tender points in FM may provide immediate and long-lasting pain relief.

Key words: Fibromyalgia, lidocaine, botulinum, injection

BACKGROUND

Fibromyalgia (FM), with a prevalence of 2% in the general population, is a complex, heterogenous, chronic systemic disorder characterized by widespread musculoskeletal pain and a generalized reduction in pain threshold (1,2). The symptoms can range from mild to severe, which, in some patients, incapacitate their physical, mental, and social life (3). Pathophysiology is still poorly understood and diagnosis and management remain a challenge for patients and health care professionals (4,5). Currently, several drugs are frequently used alone or in a mixture (4). However, this is found inadequate in most patients. Previously, few reports described injections of either lidocaine or botulinum toxin A into multiple myofascial tender points in FM with equivocal results (6-8).

A mixture of botulinum toxin and lidocaine injections at tender points has not been previously described for FM, which may bring immediate and long-term relief. We report one such patient.

CASE

A 16-year-old college graduate, height 154 cm and weight 58 kgs, a diagnosed case of FM was referred from the Department of Rheumatology to the pain clinic for further management of pain. Pain started 5 years back following a sprain of the right ankle, 2 months after which pain started in the chest, neck, and upper and lower back. Pain was initially mild with modest improvement during hot weather and an increase in winter and cloudy days and increased over the next 2 years with considerable impact on everyday life, social interactions, and academic performances and patient became bedbound, which affected her quality of life. She was

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treated with multiple drug regimens, which included oral tablets of pregabalin, duloxetine, escitalopram, propranolol, amitriptyline, tramadol, paracetamol, clonazepam, calcium, and vitamins (9). Presently, the Numeric Rating Scale (NRS-11) was 8/10 and 5/10 without and with medication of oral pregabalin 150 mg/d and oral duloxetine 80 mg once daily, respectively.

On examination, the Widespread Pain Index (WPI) score of 12, and the Symptom Severity Scale (SSS) score of 8 with a tender point count of 12/18 was seen (Fig. 1). For immediate and prolonged relief of symptoms, tender point injections were planned. Consent has been taken from the patient regarding this report.

Procedure

General and systemic examinations, including blood and radiological investigations, were unremarkable. Tender points were marked with a sterile skin marker. A total of 12 points were identified (Fig. 1). Under aseptic and antiseptic precautions, at each tender point 0.5% lidocaine 1 mL was injected with 26-G, 1.5 inch needle connected to a 5 mL syringe. Skin over each tender point was stretched with the index and middle finger of the nondominant hand and the needle was inserted through the skin into the tender muscle with the dominant hand at an angle of about 60° to a depth till a firm grip of the muscle was felt. Following this, the muscle fibers of the tender point were explored with multiple needle passes (average 4 to 6 passes) covering all the quadrants. The patient was advised to apply ice packs to reduce muscle soreness. Tablet ibuprofen 400 mg was advised as rescue medication for pain. Postinjection, the patient reported NRS-11 of 3 at 7 days, which lasted for 2 months (Table 1).

The patient again reported to the pain clinic with NRS-11 of 8 and 13 tender points (Table 1). This time for longer pain relief, injections of a mixture of botulinum toxin (onabotulinum toxin A) with lidocaine were planned. Botulinum toxin 100 units was reconstituted with 2 mL of 1% lidocaine and dispensed in 2 insulin syringes. Under aseptic precautions, 7 units (0.15 mL) of the reconstituted botulinum toxin with lidocaine 0.5 mL was injected at each tender point (Fig. 2). There was no postinjection discomfort or complication, and the patient was discharged after 2 hours. Following this, the patient reported decrease in NRS-11 from 8 to 2 at one month and 2-3 at 4 months (Table 1). Oral doses of pregabalin and duloxetine were reduced from 450 mg/d to 150 mg/d and 80 mg/d to 20 mg/d, respectively. At 4 months, she reported NRS-11 of 6-7 and 12 tender points for which the above procedure was repeated. She presently has NRS-11 of 1-2 for the last 5 months (Table 1).

DISCUSSION

Diagnosis and management of FM remains a challenge for both patients and health care professionals. To date, no objective tests or biomarkers with sufficient diagnostic accuracy have been identified, and current analyses can only indicate a predisposition to FM (10-12). In 2016, based on a generalized pain criterion and clinic usage data, a new revision of the 2010/2011 FM criteria was developed, which included the following criteria: 1) generalized pain, defined as pain present in at least 4 of 5 regions; 2) symptoms present at a similar level for at least 3 months; 3) a WPI ≥ 7 and SSS ≥ 5 or WPI of 4-6 and SSS ≥ 9; and 4) a diagnosis of FM is valid irrespective of other diagnoses (9).

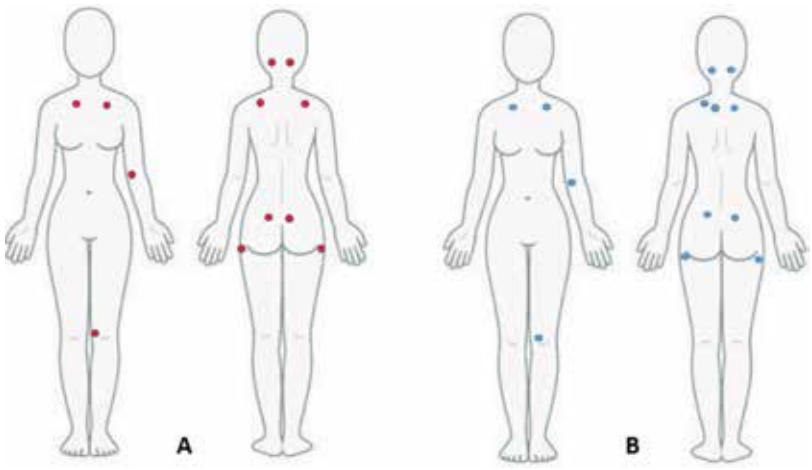

Fig. 1. Tender points injected A) lidocaine and B) botulinum toxin + lidocaine.

Treatment of FM is challenging. Clinical trials have failed to conclusively provide overall benefits of specific therapies to treat FM. Currently, several drugs are frequently used alone or in a mixture. The US Food and Drug Administration has approved only

Table 1. Outcome measures.

Outcome Measure	Lidocaine Injection				First Botulinum + Lidocaine Injection					Second Botulinum + Lidocaine Injection	
	Baseline	1 mo	2 mo	3 mo	Baseline	1 mo	2 mo	3 mo	4 mo	Baseline	5 mo
NRS-11	7	3	3	4	8	2	2	3	2-3	6	2
FIQR	72.5	38	38	50	66.5	32.5	35	32.5	42	42	34.5
VAS Sleep Index	8	3	5	5	7	2	3	2	4	4	3
Tender Point Counts	12	4	4	6	13	3	2	2	6	12	3

Abbreviations: mo: month(s); NRS-11: numeric rating scale for pain; FIQR: revised fibromyalgia impact questionnaire; VAS: visual analog scale.

3 drugs: duloxetine, milnacipran, and pregabalin (13). Pharmacological treatment alone is found inadequate for the majority of patients resulting in frustration to the patients. Due to dose-limiting adverse effects and incomplete drug efficacy, only 25% to 40% of patients reach pain reduction and only 40% to 60% achieve meaningful relief (14). Moreover, FM is associated with an increase prevalence of comorbid conditions, including a mood disorder, anxiety disorder, migraine, tension-type headaches, irritable bowel syndrome, chronic fatigue syndrome, temporomandibular disorder, and multiple chemical sensitivities often rendering a highly disabling syndrome that is linked to increased health care costs and a detrimental impact on quality of life (15).

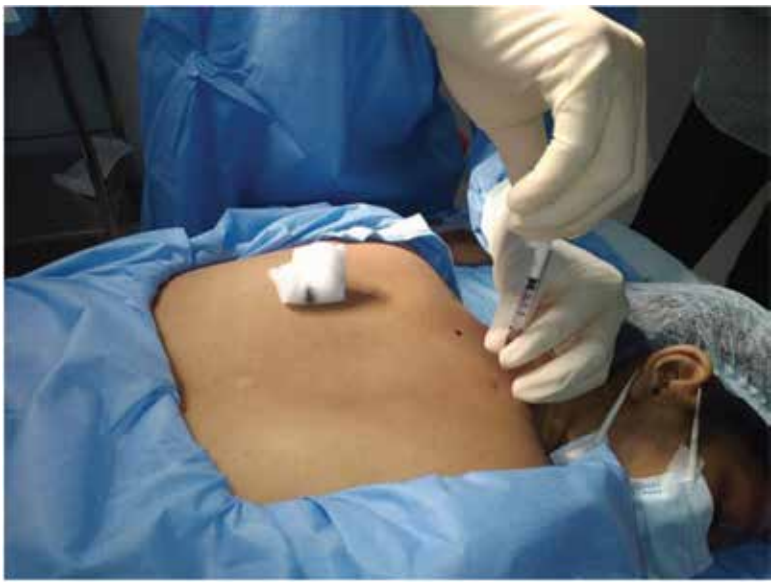

Fig. 2. Botulinum toxin + lidocaine injection.

Management of FM frequently involves a multidisciplinary program that target the peripheral, central, cognitive-emotional, and interpersonal causes of the chronic pain, which includes patient education, addressing comorbidities, an exercise program and drug therapy, and various complementary and alternative measures, including "mind-body" therapies, such as tai chi and yoga and alternative therapies like thermal, light, electrostimulation, and therapeutic exercise.

Previously, lidocaine was injected in tender points of FM, which resulted in improved pain intensity, pain threshold, and range of motion for up to several weeks (6,7,16). Onabotulinum toxin A injections at multiple tender points have also been injected previously in 16 patients of FM. In this series, injection courses required were 1 in 5 patients, 2 in 7 patients, 3 in 3 patients, and 4 in 1 patient. The authors reported significant improvement of pain in all patients, which lasted for 16 weeks after each injection (8). Contrarily, when injections of onabotulinum toxin A (100 units) were compared to lidocaine (0.5%) injections in 10 patients of primary axillary hyperhidrosis, none of the patients who received onabotulinum toxin A injections showed any improvement (17).

Reconstitution of onabotulinum toxin A in normal saline is the current accepted practice. However, mixing it with lidocaine has shown no decrease in pharmacologic potency and higher patient satisfaction (17,18).

In the present patient, a mixture of lidocaine and onabotulinum toxin A was injected at all tender points of FM. Effect of lidocaine is immediate and results in instantaneous pain relief. This has a positive impact on the patient to the procedure and also acts as a bridging

therapy till effect of botulinum occurs, which takes 2-3 days with maximum effect within 1-2 weeks persisting till 6 months. Thus, a combination of both these drugs was used in the present patient, which resulted in a favorable outcome. To the best of our knowledge, this has not been reported before.

CONCLUSIONS

Injections of a mixture of lidocaine and onabotulinum toxin A at tender points of FM may provide immediate and longer duration of decrease in pain with better patient satisfaction. This may be explored further with randomized controlled trials.

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