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Efficacy of Multiple Trigger Point Injection in Chronic Tension-type Headache: a pilot study

Dong Rak Kwon[1†], Kang Lip Kim[1*], Gi Young Park[1], Jae Hyuk Kwak[2], Dae Gil Kwon[3]

Daegu Catholic University Medical Center, Department of rehabilitation medicine[1], Daegu Catholic University Medical Center, Department of Neurology[2], Comprehensive and Intergrative medicine hospital, Department of Rehabilitation Medicine[3]

Objective
There are several pharmacological and non-pharmacological therapies for the patients with chronic tension-type headache (CTTH). Trigger point injections (TPIs) with local anesthetics are performed to treat the tension-type headache. However, repeated injection of local anesthetics cause toxicity to the muscles. The aim of this study is to investigate the efficacy of multiple TPIs with isotonic saline, which has no side effects with repeated injections, in CTTH.

Methods
Eleven patients of the 26 total headache patients were selected for inclusion if they were at least 18 years of age, met HIS (International Classification of Headache Disorders) criteria for CTTH, had identifiable cervical myofascial trigger points (TPs) that referred pain corresponding to their characteristic headache pattern, had no other significant pain problems and had pain intensity greater than 2cm on the Visual Analog Scale (VAS). All patients had little response to the pharmacological therapy. Patients received isotonic saline injections into the active trigger points identified in the physical examination under ultrasound guidance once per week. Headache intensity was the primary outcome measure, which was assessed using a 10 cm horizontal VAS on each visit. Quality of life was evaluated using the Henry Ford Headache disability inventory (HDI) and the amount of acetaminophen (AAP) used was counted as the secondary outcome measures. Wilcoxon signed rank test was used to compare the outcomes between at the baseline and after the last injection.

Results
This study included 11 patients (7 males and 4 females; mean age, 55.8 years; range, 37-74 years) with a mean symptom duration of 49.9 months (Table 1). Mean number of injections was 6.4 [3 to 14]. The splenius capitis and the upper trapezius was the most frequently injected muscles (Table 1). Baseline and after the last injection, Visual Analogue Scale (VAS) decreased from 6.1 ± 2.3 to 1.7 ± 2.1 ($P<0.05$, Table 2). Eight of 11

patients who were assessed HDI, HDI score reduced from 49.0 ± 41.5 at baseline to 22.0 ± 24.7 after the last injection (P<0.05, Table 2). Each patient showed improvement in VAS and HDI over repeated trigger point injections (Figure 1). Four patients of 11 who were taking AAP without prescription, AAP counts decreased from 8.4 pills per week at the baseline to 0.1 pills per week after the last injection. There were no adverse effects or untoward events reported.

Conclusion

This pilot study showed that multiple trigger point injections to the head and neck muscles with isotonic saline in patients with chronic tension-type headache is effective and safe in relieving headache intensity, improving the quality of life, and reducing pills counts.

Keywords: Trigger point injection (TPI); Chronic tension-type headache (CTTH); Visual Analogue Scale (VAS); the Henry Ford Headache disability inventory (HDI)

Table 1. Demographics and clinical characteristics of patients

Characteristics	N=11
Age, y, mean [range]	55.8 [37-74]
Sex, n (%)	
Male/female	7 (63.6) / 4 (36.4)
Symptom duration, m, mean (SD)	50.9 (71.9)
Injections, n, mean [range]	6.4 [3-14]
Number of injections at muscles	
Splenius capitis	49
Upper trapezius	39
Levator scapulae	13
Sternocleidomastoid	4
Scalenus medius	4
Occipitalis	3
Temporalis	3
Masseter	3

Table 2. Improvement of VAS, HDI between baseline and after the last injection

	Baseline	Last injection	*P* value
VAS (cm), mean ± SD	6.1 ± 2.3	1.7 ± 2.1*	.005
HDI (score), mean ± SD	49.0 ± 41.5	22.0 ± 24.7*	.028

Abbreviations; VAS: visual analogue scale; HDI: headache disability inventory;
*$P<.05$ calculated by Wilcoxon signed rank test between at baseline and after the last injection

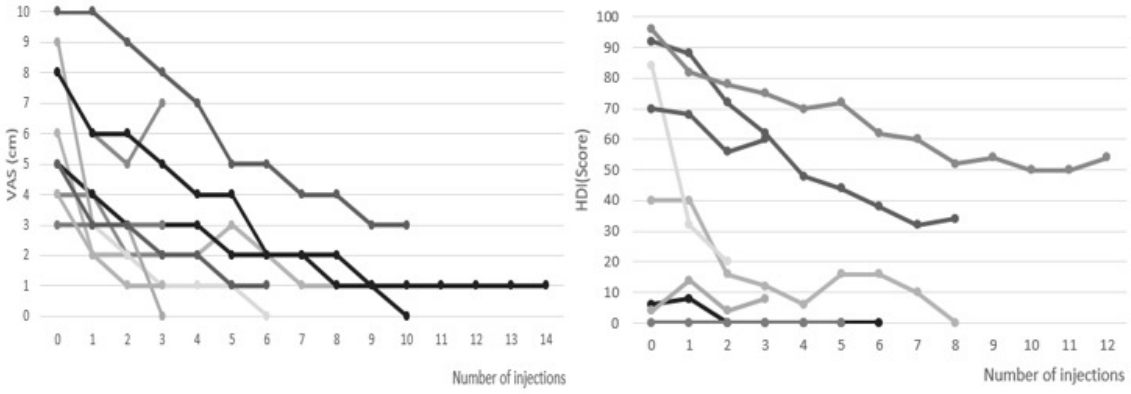

Figure 1. Change of the the VAS and HDI over the number of Trigger point injections