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Spontaneous Electrical Activities in Myofascial Trigger Points

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Introduction

Myofascial pain syndrome is diagnosed clinically. Associated muscle pain and tenderness are known to be caused by trigger points. The electrophysiological findings of myofascial trigger points have been studied and they revealed spontaneous electrical activities (SEA) are more likely to be recorded at myofascial trigger points compared to normal muscle tissues. This study is designed to compare the electrophysiological characteristics of active myofascial trigger points and latent one using 2-channel EMG recording.

Materials & Methods

Among the patients who had visited the clinic of Physical Medicine and Rehabilitation Medicine for pain in neck and shoulder area, 104 upper trapezius muscles were enrolled. The subjects had clinical characteristics of myofascial trigger point which were hyperirritable spots in a palpable taut band, referred pain, and local twitch response (LTR) in upper trapezius. The presence of spontaneous pain was the differential point between active trigger point and latent one. Intramuscular electrical activities were explored using 2-channel EMG recording and 37mm disposable monopolar needle electrode was used. The test needle was located at the trigger point within a taut band and the control needle was placed 1 ~ 2cm away from the test site but not in a tender area of that muscle. After the confirmation that insertion of the control needle did not make corresponding pain and insertion of the test needle evoked LTR, examination using the test needle proceeded. The test needle was advanced very slowly about 1mm of eight times to search for SEA. Following eight advancements in one track, another two tracks rotating the needle at the angle of 15 degrees were examined and making a total of 24 advances at each muscle. SEA was identified, as known, as EPN (End-Plate Noise) and EPS (End-Plate Spikes).

Results

Active myofascial trigger points presenting the spontaneous pain were detected clinically in 41 muscles and latent myofascial trigger points were observed in 63 muscles. The number of points that exhibited EPN was 731 (74.3%) of 984 sites of active trigger points and 575 (38.0%) of 1512 sites of latent trigger points. This difference was statistically significant ($p<0.05$). The number of points exhibited EPN with EPS in active trigger points was 702 (71.3%), compared to 192 (12.7%) in latent trigger point, was also significantly different ($p<0.05$).

Conclusion

End-Plate noise could be recorded in both active and latent myofascial trigger points but more prevalent in active trigger points. End-Plate spike seems to be characteristics of the active myofascial trigger points.