Diagnosis and Treatment of Muscular Chest Wall Pain Originating from Intercostal Muscle Mimicking Cardiopulmonary Chest Pain

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1. Patients

Between March 2016 and December 2017, 21 patients complaining chest wall pain visited the neuromuscular pain clinic. Review of the medical records, history taking and physical examination were made, and imaging studies including plain image, computed tomography, or bone scan were reviewed.

Except one patient with no tenderness, 20 patients were categorized as follows; Group A: focal tenderness by patient’s self-examination and focal tenderness by physician, Group B: diffuse tenderness by patient and focal tenderness by physician, Group C: diffuse tenderness by patient and diffuse tenderness by physician (Table 1).

2. ETOIMS

ETOIMS was applied in 19 patients by monopolar needle into multiple tender points of each intercostal muscle using unipolar negative wave of 2 mA with 0.2 ms pulse duration with 1 Hz for 3–5 seconds, and the numeric rating scale (NRS) was recorded.

3. Statistical Analysis

Three groups were analyzed by ANOVA, and p-values of <0.05 were considered statistically significant.

Results

Duration from onset to the first visit to this clinic had significant differences between 3 groups (p=0.038).

Resting pain (61.9%), dyspnea (38.1%), and dyspnea on exertion (9.9%) were also present. Pain was aggravated by inspiration (66.7%) or expiration (23.8%). Although these are especially confusing symptoms in differential diagnosis from cardiopulmonary origin, the characteristics that pain aggravates with trunk rotation especially to ipsilateral side would be a differential point along with tenderness (Table 1).

As previous treatments of medication (66.7%), physical therapy (12.7%), or injection therapy (4.6%) didn’t relieved pain significantly, ETOIMS was applied in 19 patients and effective in 16 patients. NRS was reduced by 2.9 in Group A, 1.9 in Group compared to the NRS on the 1st visit. In Group C, ETOIMS had no effect (p=0.030) (Table 1).

Conclusion

The chest wall pain of muscular origin should be considered for differential diagnosis from cardiopulmonary chest pain. Tenderness usually accompanies, and ipsilateral trunk rotation provokes the pain in most cases. Physicians should aware of that the resting dyspnea or dyspnea on exertion also can be present, and the pain aggravates with respiration in some cases. ETOIMS is effective in reducing the pain with intercostal muscle origin, especially in patient with focal tenderness.

Table 1. Characteristics of pain and effect on ETOIMS