ASSESSMENT ON THE EFFECTIVENESS OF THORACIC SPINAL MANIPULATION IN PATIENTS WITH MECHANICAL NECK PAIN

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ABSTRACT

The purpose of the article is to evaluate the functional impact of manipulation/mobilization of the thoracic region in patients with mechanical neck pain (MNP).

The survey was conducted with 34 patients (23 male and 11 female) with subacute MNP, mean age 38,2 (22-46 y.o.). They have not been treated with any other kind of treatment by that time.

The patients were assessed on the beginning of every treatment session with goniometry and Neck disability index (NDI) with follow up of six weeks. Every patient has 5 visits in the first two weeks and 1 final visit after 6 weeks.

Methods. Techniques for high-velocity, low-amplitude spinal manipulation of the region of the thoracic region were used to treat the patients. First posterior-anterior direction, then rotation was assessed on every level and applied in the region of hypo mobility.

Results. There has been significant improvement in the symptoms of MNP in 26 (76.47%). In the rest of them, there were no benefit from the thoracic manipulation and they were treated with cervical spine mobilization techniques. Maximum benefit has been recorded after the first and second treatment sessions. Most often, the posterior-anterior mobility has been affected, and posterior-anterior mobilization has been of more benefit.

Conclusion. The hypo mobility of the upper thoracic region (C7-Th3) is a possible source for MNP. That is why we strongly recommend functional assessment and treatment of the upper thoracic spine in every case of MNP with impact onto posterior-anterior thrust techniques.

Key words: manual therapy, thoracic spine, neck pain

INTRODUCTION

The mechanical neck pain is one of the most poorly understood and difficult for management spine disorder. This is evident in its resistance to treatment and the frustration it induces in practitioners called upon to deal with this problem. Moreover mechanical neck pain is one of the common problems in the muscle-skeletal physical therapy.

Spinal mobilization/manipulation are accepted as an effective treatment strategy for spinal neck pain. In low back and thoracic pain usually the mobilization/manipulation, respectively of the lumbar and the thoracic spine, results in immediate analgesic effects in patients. However, in patients with mechanical neck pain there is a tendency that the mobilization/manipulation of the cervical spine is not that effective.

This tendency could be explained with the kinematics of the cervical area. The movements of the head could be felt to reach the upper thoracic

segments between Th1-Th3. It is well known that the movements of the head start from the upper cervical segments and continue downwards to the lower segments. That's why we could consider that the source for the end range mechanical pain in neck movements should be the upper thoracic region that is involved during end stages of the movement. According to this thesis we think that mobilization/manipulation of the upper thoracic segments is more reasonable maneuver for end range mechanical neck pain than the mobilization/manipulation of the lower cervical spine segments.

Aim and objectives of the study

The purpose of the study is to evaluate the functional impact of manipulation/mobilization of the thoracic region in patients with mechanical neck pain (MNP). It is of great importance for the clinical practice to find out if manipulation of the thoracic spine is of benefit in patients with mechanical neck pain. In addition, if so, which kind of technique should be used?

The survey was conducted with 34 patients (23 male and 11 female) with subacute mechanical neck pain, mean age 38,2 (22-46 y.o.). They have not been treated with any other kind of treatment by that time.

METHODS

The current study represents the manipulation techniques, which were used for treatment of the mechanical neck pain. First posterior-anterior direction, then rotation in the cervical and upper thoracic spine was assessed on every level (Figure 1).

Figure 1. Assessment of cervical spine rotation (A) and antero-posterior translation (B).

Then techniques for high-velocity, low-amplitude spinal manipulation of the region of the thoracic region were used to treat the patients (Figure 2).

The techniques were and applied in the region of hypo mobility, found out during the assessment.

Figure 2. Techniques for manipulation of the upper thoracic motion segments - anterior-posterior translation (A) and rotation (B).

Assessment of the immediate effect of every technique has been provide. The patients also were re-assessed on the beginning of every treatment session with goniometry and Neck disability index (NDI) with follow up of six weeks. Every patient has 5 visits – 4 in the first two weeks and 1 final visit

after 6 weeks.

If there was no benefit from the first two sessions, mobilization/manipulation of the cervical spine has been done.

RESULTS

The initial assessment of the cervical and upper thoracic spine mobility shows that 26 (76.5%) of the patients has limitation in upper thoracic region (Table 1). Five of them have limited accessory mo-

bility in atlanto-occipital joints (14.7%) and only 3 of them (8.8%) have restricted mobility in the cervical region (C1-C7).

Table 1. Initial assessment of the mobility of the cervical and upper thoracic region.

Region	Restricted mobility/% (n=34)
Atlanto-occipital joints (C0-C1)	5 (14.7%)
Cervical region (C1-C7)	3 (8.8%)
Upper thoracic spine (C7-Th3)	26 (76.5%)

The analysis of the immediate treatment effect shows significant improvement in 19 patients after the first treatment session, and in another 7 patients after the second treatment session (Figure 3). There were 8 patients without or with slight improvement after the first two sessions. They were treated with

mobilization/manipulation of the atlanto occipital or cervical segments according to the localization of the restriction. In 5 of them there were fast improvement after the 3 session, and in another 1 after the fourth sessions. Only 2 patients left without significant improvement after the fourth session.

Legend: TS – treatment session, NB – no benefit

Figure 3. Presentation of the immediate pain relieve effect on the patients.

The assessment with goniometry shows restriction in the rotation in the direction of the painful sight in all the patients before the first treatment session (mean 7.5 ± 2.5 degrees). The examinations on the beginning of every following sessions shows normalization of the symmetry of the rotation in all of the patient that reported pain relieve.

The assessment with the Neck disability index (NDI) shows moderate impairment in all of the patients (mean score 20.3 ± 3.5). All of the patients with reported pain relieve shows improvement to mild or no impairment on the next treatment session.

After the six weeks follow up normal mobility in 31 patients has been found. There was only 1 patient (among those with treatment benefit after the first four sessions) with new episode of mechanical

neck pain. There were also significant improvement in the results from the neck disability index. The mean score of the patients with treatment benefit is 3 ± 1 . That means that there was no impairment in the cervical spine.

CONCLUSION

The mobilization techniques should be accepted as a method of choice for the patients with subacute mechanical neck pain. The benefit of these techniques depends on the precise interpretation of the data received during the assessment of the accessory motion. The restrictions in the upper thoracic spine should not been neglected because this region is a common source of pain and restriction of the cervical movements, especially the end range rotation. The most effective mobilization technique for the upper thoracic region is the anterior-pos-

terior gliding, and if it is not effective, rotational mobilization should be applied. These techniques are especially effective and appropriate if there is end range pain in the cervical region that restricts the range of motion.

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