

# A NEGLECTED REASON OF VERTIGO AND A NEW APPROACH TO THE PATIENT WITH VERTIGO: MYOFASCIAL PAIN SYNDROME

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## ABSTRACT

• **Objective:** It is not always possible to find an exact diagnosis and treatment for dizziness (non-rotatory vertigo) attacks of long duration. Myofascial Pain Syndrome (MPS) is a disease of the soft tissue which presents itself with severe pain localized to certain muscles and limitation of mobility caused by muscle spasms. The aim of this study is to underline the importance of MPS of the clavicular division of the sternocleidomastoid muscle as an etiological cause in follow-up patients of dizziness (non-rotatory vertigo) of unexplained origin.

• **Material and Method:** 32 patients with myofascial pain syndrome after the detection of a trigger points at the clavicular division of the sternocleidomastoid muscle (bilateral in 23 cases, unilateral in 9 cases) and complaining of non-rotatory vertigo were studied. None of the patients exhibited any abnormality after the neuro-otological evaluation and audio-vestibular assesment. All of the patients

received 10 sessions of superficial heat application on the sternocleidomastoid muscle then the affected muscle was stretched.

• **Results:** Vertigo complaints of the 13 patients out of the 32 patients disappeared completely and 19 patients' complaints decreased by 50%.

• **Conclusion:** These results have shown us that myofascial pain syndrome should be kept in mind for dizziness etiology and should be investigated clinically. Based on the observation that this issue has not come up and has not received attention among the literature, this study has been regarded as a preliminary study and it has been concluded that the role of myofascial pain syndrome in the etiology of vertigo should be investigated with controlled, long term patient follow up studies.

• **Key Words:** Dizziness, myofascial pain syndrome, sternocleidomastoid muscle. Nobel Med 2008; 4(1): 17-21

## ÖZET

### VERTİGONUN İHMAL EDİLEN BİR NEDENİ VE VERTİGOLU HASTAYA YENİ BİR YAKLAŞIM: MİYOFASİYAL AĞRI SENDROMU

• **Amaç:** Uzun süreli baş dönmesi (non-rotatuvar vertigo), her zaman nedenini bulmanın ve tedavi etmenin mümkün olmadığı bir tablodur. Miyofasiyal Ağrı Sendromu (MAS) belirli kaslarda lokalize ağrı ve kas spazmının neden olduğu hareket kısıtlılığı ile seyreden bir yumuşak doku hastalığıdır. Multipl lentiginleri bulunan hastalar, sistemik lezyonlar ve özellikle kalp hastalıkları açısından araştırılmalıdır. Bu çalışmanın amacı baş dönmesi (non-rotatuvar vertigo) tanısı ile takip edilen hastalarda sternokleidomastoid kasının klavikular bölümünü etkileyen MAS'ın etiyolojik bir neden olarak önemini ortaya koymaktır.

• **Materyal ve Metod:** Non-rotatuvar vertigo yakınması olan ve sternokleidomastoid kasının klaviküler diviz-

yonunda tetik nokta tespit edilen 32 hasta (23 vakada bilateral, 9 vakada unilateral) çalışmaya dahil edildi. Hastaların hiçbirinde nörootolojik muayene ve vestibüler işitsel testlerde bir anormallik tespit edilmedi. Hastaların hepsine sternokleidomastoid kası üzerine 10 seans yüzeysel sıcak uygulandıktan sonra etkilenen kasa germe yapıldı.

• **Bulgular:** 13 hastanın baş dönmesi tamamen kaybolurken, 19 hastada ise %50 oranında azalma oldu.

• **Sonuç:** Bu sonuçlar vertigo etiyolojisinde miyofasiyal ağrı sendromunun akla gelmesi ve klinik olarak araştırılması gerektiğini göstermiştir. Literatürde bu konunun yeterince ilgi görmediği de göz önüne alınırsa, bu çalışma bir ön çalışma niteliğinde olup, uzun dönem takipli ve kontrollü çalışmalar ile sorgulanmalıdır.

• **Anahtar Kelimeler:** Vertigo, miyofasiyal ağrı sendromu, sternokleidomastoid kası. *Nobel Med* 2008; 4(1): 17-21

## INTRODUCTION

Myofascial Pain Syndrome (MPS) is a disease of the soft tissue which presents itself with severe pain localized to certain muscles and limitation of mobility caused by muscle spasms. MPS is frequently overlooked as a diagnosis because it is often accompanied by signs and symptoms in addition to pain, coincidental pathological conditions, and behavior and psychosocial problems.<sup>1</sup> There are trigger points in MPS located in the muscle responsible for the pain. When the pressure is being applied to these points, the patient experiences very severe pain and this pain may spread to other regions. According to Boureau et al., the reason of the referred pain is the sensitization of the nociceptive central pathways.<sup>2</sup> Within each trigger point is a hyperirritable spot, the 'taut-band', which is composed of hypercontracted extrafusal muscle fibers. Twitch response is the pathognomonic sign for the active trigger points.<sup>3</sup>

The proprioceptive mechanisms at the neck are very important in defining our position in space and achieving balance. Because the sternocleidomastoid muscle (SCM) is the main muscle determining the position of the head, in the MPS of this muscle the proprioceptive mechanisms coming from the upper extremities and the neck muscles are cut off. This situation is reversed if the trigger point in the muscle is inactivated.<sup>4</sup>

## Myofascial pain syndrome of the sternocleidomastoid muscle

There are two divisions of the SCM muscle: sternal and clavicular. Stimulation of both of these divisions can cause different autonomic and proprioceptive disorders. For instance stimulation of the trigger points within clavicular division may cause to dizziness. Sudden head movements can stimulate these trigger points and can cause a range of symptoms leading to syncope lasting from a couple of seconds to a few hours.<sup>3,4</sup>

In SCM muscle's MPS, the symptom triad are: Frontal headache, postural dizziness and dismetry. Vertigo is a general term where dizziness is a non-rotatory form of vertigo. When MPS of the SCM is present, the patient may be unable to drive his/her car. This condition is actually an important reason underlying many traffic accidents that one does not think of. In these patients Romberg test is negative, and nystagmus and neurological deficits are not present.<sup>4,5,6</sup>

Treatment options in MPS are general posture education and exercises, cold spray-stretch or stretch after heating, trigger point injection and stretch, trigger point treatment with laser, medical treatment. Many studies in patients with MPS showed that the application of heat and stretching had effects on active trigger points →

of these patients.<sup>1,3,4,7</sup>

The aim of this paper is to underline the importance of MPS of the clavicular division of the SCM as an etiological cause in follow-up patients of dizziness (non-rotatory vertigo) of unexplained origin.

## MATERIAL and METHOD

In this study 35 consecutively evaluated patients who were diagnosed as SCM MPS and complaining about a feeling of a disturbed sense of relationship to space (dizziness-non-rotatory vertigo) at the Vertigo Unit of the Physical Medicine and Rehabilitation Department, Istanbul Medical Faculty were studied. Patients with a subjective or objective sense of rotatory movement (rotatory vertigo) were excluded. In otolaryngology Department of Istanbul Medical Faculty, full neuro-otological examinations of all patients have been performed; pure tone audiometry, tympanometry and acoustic reflex tests have been studied. Neuro-otological examination including tests of balance, spontaneous nystagmus examination, positional testing, bedside assessment of vestibulo-ocular reflex (VOR) and examination of cranial nerves were done routinely to all patients. Electronystagmography (ENG) was applied to all of the patients. In the evaluation of ENG, criteria established by Barber and Stockwell have been taken into consideration.<sup>8</sup>

After completing neuro-otological and neurological evaluation, all of the patients were reevaluated at the Vertigo Unit of the Physical Medicine and Rehabilitation Department, for their appropriate treatment. Three patients were lost to follow up.

32 of the patients were examined and a trigger point was detected at the clavicular division of their SCM muscles, which resulted in a MPS diagnosis. Ten sessions of superficial heat application was performed on all of the patients.

Patients were asked whether the vertigo increased with stress or cold. The patients were asked to describe the severity of the vertigo according to the Visual Analog Scale (VAS) just before and 10 days after the treatment. It was explained to the patients that 0 was for no vertigo, 5 was for moderate vertigo and 10 was for unbearably severe vertigo and they were asked to describe the severity of the vertigo during the last week according to this scale.<sup>9</sup> The results of VAS were assessed using the Wilcoxon signed ranks test ( $p < 0.05$  statistically significant) with SPSS 11.0 statistics computer program.

## RESULTS

The ages of the patients were within the range of 28-

72 years, and the mean was  $43 \pm 8$  years. 27 of the patients were female (84.4%), and 5 were men (15.6%). None of the patients exhibited any abnormality after the neuro-otological evaluation and audio-vestibular tests.

Trigger points were found in the clavicular division of the 32 patients; in 7 of them a trigger point at the sternal division was also found. The trigger points at the clavicular division were bilateral in 23 of the cases and were unilateral in 9 of the cases. The mean trigger point number was 3, and the range was 1 to 7. The patients with trigger points at the sternal division reported complaints of ipsilateral lacrimation increase, coriza, congestion in the maxillary sinus and tinnitus from time to time.

In the evaluation performed on the 10th day after the treatment, vertigo complaints of the 13 patients out of 32 patients completely disappeared, complaints of the 19 patients decreased by 50% or more. When trigger point sensitivity after the treatment was investigated of those 13 patients whose vertigo complaints had completely disappeared 9 patients had completely inactive trigger points, in 4 patients the sensitivity was seen to be less when compared with before. Trigger point sensitivity had decreased in 19 patients whose complaints had decreased. To maintain this improved condition and to prevent remission the patients were educated about MPS and the preventive measures in MPS.

The severity of the vertigo evaluated by VAS, differences between 2 and 10 before the treatment with a mean of 6.6, where as it decreased down to an almost nonexistent degree (0.7) after the treatment ( $p < 0.01$ ).

Twenty-eight of the patients (87.5%) reported an increase in dizziness with stress, and 22 (68.8%) reported an increase in dizziness with cold.

## DISCUSSION

The studies investigating the relationship between MPS and vertigo are seen to be very few in numbers in current literature. There are mainly studies reporting the frequent occurrence of otological findings in temporomandibular joint disorders (TMJD).<sup>10,11,12</sup> It has been reported that MPS frequently accompanies TMJD.<sup>13</sup> Palazzi et al., have reported that SCM is one of the most frequently effected muscle in cranio-cervical-mandibular disorders.<sup>14</sup> Similarly, Zuniga et al., have shown with EMG recordings that in cranio-cervical-mandibular dysfunction patients with tooth clenching the most effected muscles are the SCM and the upper part of the trapezius.<sup>13</sup>

The possible role of myofascial pain syndrome as a cause of dizziness and its neurophysiological explanation →

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is controversial; cervical paravertebral muscles are very rich in proprioception. Especially the clavicular division of the SCM is the main muscle responsible of the spatial orientation of the head as to the body. The proprioceptive stimuli coming from this region through out the head movements end up in the vestibular nucleus. The trigger points generated with in the MPS of the SCM cause the abnormal stimuli as a result of which dizziness, a kinesthetic illusion, is seen. The main reason for the activation of the trigger points is holding the head in an extended position for long periods of time. Painting the ceiling, or hanging up the curtains without resting in between can be examples of this.<sup>4</sup>

Dunteman et al., have reported that they have been successful in treating severe bifrontal headache by injection of local anesthetics to the trigger points within the SCM muscle.<sup>16</sup> If we consider frontal headache as a frequent component of the triad for MPS of SCM, we believe the fact that dizziness can be overcome with local heat application and stretching supports our view.

Tuz et al, reported that otalgia, tinnitus and vertigo were the most common otological symptoms in TMJD and patients with these symptoms have MPS. In MPS, SCM is frequently affected and this situation is suspected to cause dizziness.<sup>17</sup>

The patients' age were young and the majority of the patients were women, these findings are in agreement with MPS. The fact that dizziness experienced by the patients were related to and increased with cold and stress supports the view that MPS can be related to dizziness.<sup>18</sup>

We preferred to apply superficial heat as the physical treatment method. There are also studies about the treatment of MPS by deep heating methods such as ultrasound. In of these studies, Esenyel et al. have applied ultrasound to a group of patients with trigger points in upper trapezius muscle after which they have stretched the muscle.<sup>19</sup> The reason for our choice of superficial heat was the difficulty of applying the ultrasound on the neck and the scale of the adverse effects.<sup>20</sup> Travell recommends stretching especially after cold spray application; however, lately the fact that these sprays are flammable and explosive, and that they

can cause tissue necrosis due to fast cooling and that they are a hazard to the environment has decreased their use.<sup>4</sup> Another reason behind our not choosing cold application was that our patients mainly preferred heat application.

It is not completely known whether superficial application of heat along with stretching inactivate the trigger points by means of musculotendinous unit and muscle spindle system or of vasodilation and antispasmodic effect. But, trigger point inactivation obtained after the application of stretching and superficial heat appears to have favorable effects on the complaints of non rotatory vertigo of patients.

Conclusions of this study about MPS and vestibular disturbance are limited by our vestibular test capabilities. Instrumentation for more complete evaluation of the operating range of the VOR by rotatory stimulation and of vestibulospinal function by posturography was unavailable and should be included in further studies.

Vertigo attacks of long duration remain to be a problem both for the patients and for the physicians. In such cases vestibular rehabilitation, can be processed based on using the existing adaptive and compensatory mechanisms within the human brain. In this last stage of the therapy the patient should be evaluated very carefully. The patient should be investigated for MPS which is seen to be an important reason of dizziness providing a field still open for research, and this should be integrated into the routine physical examination of the vertigo patient. We can say that superficial heat application followed by stretching of the muscle seems to be an effective method and can be preferred as alternative treatment.

These results have shown us that myofascial pain syndrome should come to mind for dizziness etiology and should be investigated clinically. Based on the observation that this issue has not come up and has not received attention among the literature, this study has been regarded as a preliminary study and it has been concluded that the role of myofascial pain syndrome in the etiology of vertigo should be investigated with controlled, long term patient follow up studies.

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**✓** GÖNDERİLDİĞİ TARİH: 28 / 03 / 2007 • KABUL TARİHİ: 06 / 09 / 2007

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