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PREVALENCE OF UPPER CROSS SYNDROME AMONG THE MEDICAL STUDENTS OF UNIVERSITY OF LAHORE

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ABSTRACT

Background: Upper cross syndrome is becoming more prevalent in today's population. The syndrome is expressed as a postural disorder presenting with over active pectoralis musculature and upper trapezius musculature. Also there is inhibition of lower and middle trapezius musculature, which results in winging of scapula, elevated and abducted scapula. This scapular dyskinesia there by resulted in rounding of shoulders. The syndrome is often associated with bad posture in routine life or occupation of a person. The purpose of the study is to determine the prevalence of upper cross syndrome in medical students of Lahore.

Methods: A convenience sample of 384 medical students was selected from university of Lahore, based on inclusion and exclusion criteria. Medical students of age between 17 to 22 years with sound physical and mental state were included. Students with any trauma, recent injury, recent fracture or surgery and any serious underlying pathology that may interfere with mobility of upper limb were excluded from the study. The research was a cross sectional observational study and self-administered questionnaires were circulated among participants and the data was analyzed using SPSS version 21. Reed-co scale was used to analyze the proper alignment of head, neck and shoulder; where as wall push test was used to assess the abnormal protrusion of scapula.

Results: The study have revealed that 48.7% population of the students have neck pain; and the results have concluded that high prevalence of upper cross syndrome in medical students of university of Lahore and a 66.8% of population was found to have poor studying posture.

Conclusion: In this study relation between upper cross syndrome and bad posture were seen and it was found that the individuals suffering with upper cross syndrome were somehow related to bad posture or indulge in activities which make individual to adopt a posture of high physiologic cost there by leading to muscular imbalance that will yield upper cross syndrome and prevalence of upper cross syndrome in medical students of University of Lahore was found to be 37.1%.

Keywords: Mid-Pectoral Fascial Lesion, Upper cross syndrome, Torsional upper cross syndrome, over inhibition, over facilitation, Thoracic kyphosis, Winging of scapula.

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INTRODUCTION

Upper cross syndrome (UCS) is the tightness, over-facilitation, over-excitation of the levator scapulae, pectoralis major and upper trapezius whereas weakness, inhibition, suppression of serratus anterior, deep neck flexors more specifically scalene, middle trapezius, lower trapezius and rhomboids [1]. The syndrome mainly arises as a result of muscular imbalance that usually develops between tonic and phasic muscles, tonic muscles are the muscles that most of the time become tight i.e. over facilitated whereas phasic muscles are the muscles of lower activation i.e. they are more towards developing inhibition [2,3].

Poor posture cause stress on cervico-cranial and cervico-thoracic junction. Stability of scapulae is reduced due to the altered angle of glenoid fossa and as a result all the movement patterns of upper limb are changed [4].

People usually sit with position of head in different manners. It depends on various factors which includes musculoskeletal structures, body changes regarding age, cultural customs, motor performances and occupation [5]. Because of poor sitting posture the patients may develop forward head posture along with rounded shoulders due to increased kyphosis in thoracic region. This kind of posture is related to altered scapular positions, muscular activities and body kinematics. These changes gradually increase muscular tension, impart stress on neck and shoulders which results in pain, loss of function, numbness, and different neuromuscular symptoms in the upper body [6].

While sitting, forward head position includes flexion of lower cervical region, extension of upper cervical region, and rounded shoulders, which in average reduces the length of muscle fibers, resulting in extensor torque around the joints of upper cervical region. This abnormal state results in musculoskeletal abnormalities which includes decreased scapular upward rotation, greater internal rotation and anterior tilt, resulting in difficulty to maintain upright sitting posture [7,8]. Antagonistic muscular imbalances, in upper cross syndrome give rise to postural disturbance [9]. Previously it was thought that fascial tissue has only anatomical compartment and binding role but recently it has been ruled out that fascial tissue plays major role in sensory and kinetic chain along with transfer of load. After the realization of its importance, the term mid-pectoral fascial lesions was introduced by authors to describe myofascial disorders [10]. The purpose of the study is to find the prevalence of upper cross syndrome in medical students of university of Lahore who adopted poor sitting postures.

MATERIALS AND METHODS

A cross sectional survey was conducted in University of Lahore and a convenience sample of 384 medical students was gathered with the age group of 17-25. Self-administered questionnaires were circulated in order to diagnose winging of scapula, Patients were asked to push the wall and any abnormal protrusion of scapula was noticed. A diagnostic criterion was ruled out and people having neck pain radiating or non-radiating longer than 2 months, with

difficulty in neck stabilization, presence of any of following i.e. abnormal cervical or thoracic curve, forward head, winging of scapula, along with frequent headaches and a combined score of less than 10 on reed-co scale (for region of head, shoulder and spine) were considered as positive for upper cross syndrome. SPSS version 21 was used to analyze the data.

RESULTS

Out of 65.1% male and 34.95% female, 48.7% of the population reported about neck pain while the 51.3% population had no neck pain. However, 48.4% population mentioned that pain radiates but 51.6% reported that pain does not radiate. 25.8% population mentioned that they are experiencing pain since 2 months, 24.7% were those who were experiencing this pain since last 3 months, 7.6% population had pain since last 6 months and 30.5% population was suffering with chronic pain experiencing longer than 6 months. 53.1% of total population had no neck or upper back stiffness whereas 46.1% population had neck or upper back stiffness. 52.1% of students found it difficult to stabilize their neck whenever they were to sit for long duration, whereas 47.9% population didn't find it difficult to stabilize their neck (Table 1). When students were asked whether their pain aggravates with work or not 55.5% reported that their pain aggravates with work although 44.5% said that pain does not aggravate with work. 7% reported that isometric exercise often serves as a relieving factor for neck pain and 9.4% population was in the favor of steam pack. 7.8% was finding relief by mobility exercise and a same figure found relief through massage, 10.7% felt relief due to rest, 22.1% felt relieved simply by laying down, 13.3% preferred stretching and 21.9% didn't find any factor to relieve their pain in time of need. 33.6% population was busy in reading most of the time, 24.2% was indulge in working with computer, 18.8% was involved in activities which needs looking down and remaining 23.3% performed activities which involved the use of upper limb. Majority of students i.e. 43.1% reported that they study while lying down on their stomach, 33.1% accounted for studying in sitting upright with straight back, however 23.7% population mentioned that they study with their back flexed having book in their lap. 14.6% population had forward head, 5.5% were with increased thoracic curve, 10.4% had elevated shoulders and a same figure felt it difficult to stabilize their neck. 2.9% reported headache and 1.6% population was having winging of scapula which they were not aware of, meanwhile 24% population had no such difficulty or abnormality (Table 2) None of the participants was found to be diagnosed of upper cross syndrome. Proper position of head shoulder and spine were analyzed by using reed-co scale. This scale comprised of three grades 10, 5 and 0 namely good, fair and poor respectively. For section of head 17.44% population was in grade 0, 35.41% population was in grade 5, and 47.13% population was in grade 10 (Figure-1). For section of shoulder only 3.1% population was in grade 0, 35.9% population fell under grade 5, whereas 60.9% population was in grade 1, (Figure-2). In section

of spine the results were as follows; only 1.3% population was in grade 0, 25.8% was in grade 5, and 72.9% population was in grade 10 (Figure-3).

	Frequency	Percent	Valid Percent	Cumulative Percent
NO	184	47.9	47.9	47.9
YES	200	52.1	52.1	100.0
Total	384	100.0	100.0	

Table 1: Frequency of difficulty in neck stabilization.

Abnormality	Frequency	Percent	Valid Percent	Cumulative Percent
Forward head	56	14.6	14.6	14.6
Increased thoracic curve	118	30.7	30.7	45.3
Increased cervical curve	21	5.5	5.5	50.8
Elevated/forward bended shoulders	40	10.4	10.4	61.2
Headache	11	2.9	2.9	64.1
Difficulty in neck stabilization	40	10.4	10.4	74.5
No abnormality	92	24.0	24.0	98.4
Winging of scapula	6	1.6	1.6	100.0
Total	384	100.0	100.0	

Table 2: Frequency of abnormalities presented as a symptom of upper cross syndrome

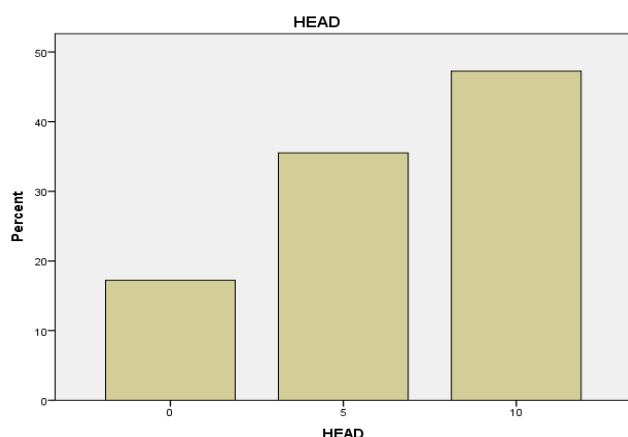


Figure 1: Percentage of Reedco scale readings in head region.

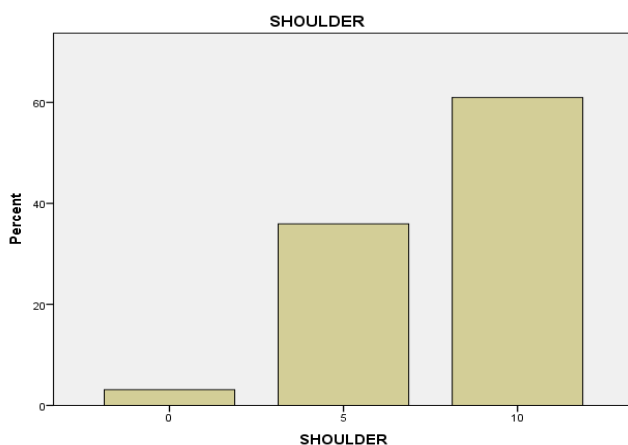


Figure 2: Percentage of Reedco scale readings in shoulder region

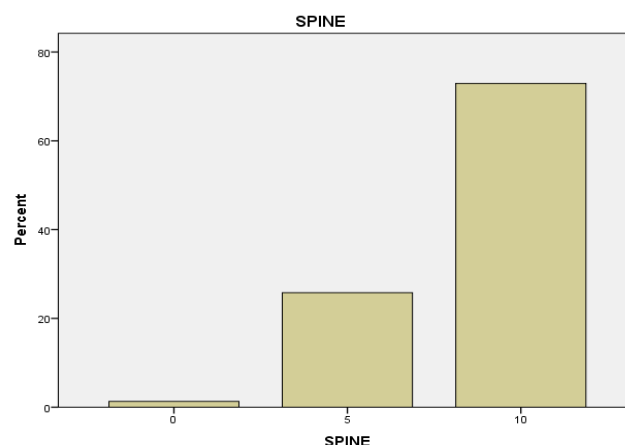


Figure 3: Percentage of Reedco scale readings in spine region

DISCUSSION

Upper cross syndrome apparently seems a simple muscular imbalance but it may impart huge stress on economy of country via resulting in frequent loss of work days due to neck pain [11,12]. André Klussman et al in 2008 conducted study on musculoskeletal symptoms of the upper extremities and the neck a cross-sectional study on prevalence and symptom-predicting factors at visual display terminal (VDT) workstations and he concluded with regard to musculoskeletal symptoms, preventive measures should focus on neck and shoulder disorders. As derived from this study, work organization plays an important role, especially when ergonomic measures are largely implemented [13]. In this study it was found that only 33.1% population had normal studying posture, whereas 66.8% population had poor studying posture and out of which 43.1% studied while laying down on their stomach and 23.7% studied while having book in their lap with flexed back.

Derek Ret et al did study in 2004 in order to find out prevalence of musculoskeletal disorders (MSD) among rural Australian nursing students and compare the results with other international studies and found that MSD is more frequent among rural Australian nursing students, when compared to their counterparts around the world. Their high rate of MSD is also comparable to that reported by hospital nurses in other countries [14]. In this study the prevalence of upper cross syndrome in students was found to be 37.1%. Situation apparently does not seem surprising but may become a devastating condition if left ignored [15]. Relation between upper cross syndrome and bad posture was also seen and it was found that the individuals suffering with upper cross syndrome were somehow related to bad posture or indulge in activities which make individual to adopt a poor posture thereby leading to muscular imbalance that will yield upper cross syndrome [16]. If proper steps are not taken at this moment this simple syndrome one day may become an endemic not only in working population and students only but also in people with luxurious life style as they are the one who are least

bothered regarding their posture [17]. Finally it is recommended that some serious steps should be taken to generate postural awareness in people of all ages especially students [18].

CONCLUSION

It has been concluded that most of the medical student exposed to the risk of adopting poor postures which can lead to upper cross syndromes in future. The results of this study suggesting the importance of postural awareness among medical students.

REFERENCES

- [1] Muscolino, J. Upper crossed syndrome. *Journal of the Australian Traditional-Medicine Society*.2015; 21(2), 80-85.
- [2] Yoo WG, Yi CH, Kim MH. Effects of a ball-backrest chair on the muscles associated with upper crossed syndrome when working at a VDT. *Work*. 2007;29(3):239-44.
- [3] Phillip Page, Clare Frank, Robert Lardner. *Assessment and Treatment of Muscle Imbalance eBook*.2010.
- [4] SD Bagg. Electromyographic study of the scapular rotators during arm abduction in the scapular plane. *Am J Phys Med*. 1986 Jun;65(3):111-24
- [5] Johnson G, Bogduk N, Nowitzke A, House D. Anatomy and actions of the trapezius muscle. *Clin Biomech (Bristol, Avon)*. 1994 Jan;9(1):44-50.
- [6] Janda, V., Muscle strength in relation to muscle length, pain, and muscle imbalance, in *Muscle Strength (International Perspectives in Physical Therapy)* Harms-Ringdahl, Editor 1993, Churchill Livingstone: Edinburgh. p. 83-91
- [7] Kang JH, Park RY, Lee SJ, Kim JY, Yoon SR, Jung KI. The effect of the forward head posture on postural balance in long time computer based worker. *Ann Rehabil Med*. 2012 Feb;36(1):98-104
- [8] Phil Page. Shoulder muscle imbalance and subacromial impingement syndrome in overhead athletes. *Int J Sports Phys Ther*. 2011 Mar; 6(1): 51-58.
- [9] Weon JH, Oh JS, Cynn HS, Kim YW, Kwon OY, Yi CH. Influence of forward head posture on scapular upward rotators during isometric shoulder flexion. *J Bodyw Mov Ther*. 2010 Oct;14(4):367-74.
- [10] Eirik Garnas. Upper Crossed Syndrome: The Personal Trainer's Guide. <http://www.theptdc.com/2014/07/upper-crossed-syndrome/>
- [11] Christensen K. Manual muscle testing and postural imbalance. *Dynamic Chiropractic* 2000; 15: 2.
- [12] Morris CE, Bonnefin D, Darville C. The Torsional Upper Crossed Syndrome: A multi-planar update to Janda's model, with a case series introduction of the mid-pectoral fascial lesion as an associated etiological factor. *J Bodyw Mov Ther*. 2015 Oct;19(4):681-9.
- [13] Klusmann et al. Musculoskeletal symptoms of the upper extremities and the neck: A cross-sectional study on prevalence and symptom-predicting factors at visual display terminal (VDT) workstations. *BMC Musculoskelet Disord*. 2008 Jun 27;9:96.
- [14] Derek R. Smith, Peter A. Leggat. Musculoskeletal disorders among rural Australian nursing students. *Australian Journal of Rural Health*. 2004;12(6):241-245.
- [15] Valli J. Chiropractic management of a 46-year-old type 1 diabetic patient with upper crossed syndrome and adhesive capsulitis. *J Chiropr Med*. 2004 Autumn;3(4):138-44.
- [16] Moore MK. Upper crossed syndrome and its relationship to cervicogenic headache. *J Manipulative Physiol Ther*. 2004 Jul-Aug;27(6):414-20.
- [17] Kwon, JW, son SM, Lee NK. Changes in upper extremity muscle activities due to head position in subjects with a forward head posture and rounded shoulders. *J Phys Ther Sci*.2015; 27(6): 1739-1742.
- [18] Steinmetz A, Seidel W, Mucche B. Impairment of postural stabilization systems in musicians with playing-related musculoskeletal disorders. *J Manipulative Physiol Ther*. 2010;33(8):603-11.

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