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Original Research Article

CORRELATION BETWEEN PAIN INTENSITY AND QUALITY OF LIFE IN PATIENTS WITH CHRONIC MYOFASCIAL PAIN

Kamal Kant Sain[1], Mrinal Joshi[2]

1. Senior Resident, Department of PMR, JLN medical college, Ajmer, 2. Director and unit head, Department of PMR, RRC, SMS medical college, Jaipur, Rajasthan

*Corresponding author – **Mrinal Joshi**
Email id – dr_mrinal_joshi@hotmail.com

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ABSTRACT

BACKGROUND: Chronic myofascial pain is one of the major causes of morbidity in modern society. It is a regional pain syndrome characterized by myofascial trigger points (MTrP). MTrP can be found upon palpation which may cause a specific referred pain pattern. The purpose of this study was to quantify pressure pain threshold of MTrP by using pressure algometer and investigate the correlation between pain intensity and quality of life. **Objectives:** To correlate pain intensity and quality of life. **Material & methods:** It was a cross-sectional descriptive study comprising 100 patients who were diagnosed clinically with chronic regional myofascial pain in neck and upper back. The pressure pain threshold was quantified with pressure algometer. Pain intensity severity was measured with sf-mpq-2 scale and correlated with SF 36. **Results:** All participants presented with myofascial pain syndrome. The most prevalent MTrPs are located in right (79%) and left (76%) upper trapezius muscle. A statistically significant correlation is found between pain intensity and parameters of quality of life ($p<0.05$). Quality of life parameters physical health, emotional health, and general health are more associated with pain intensity. The patients with higher pain intensity have lower quality of life. **Conclusion:** Myofascial pain patients with high pain intensity have decreased quality of life.

Keywords: Myofascial pain, pressure algometry, trigger point, sf- mpq-2, pressure pain threshold, quality of life, SF 36.

INTRODUCTION

In modern society, myofascial pain is one of the major causes of morbidity. It may present as regional musculoskeletal pain in neck and back mimicking radiculopathy. Neck and upper back pain is the most common complaint in myofascial pain syndrome (MPS) **(1)**. MPS is reportedly the most common diagnosis responsible for chronic pain and disability, affecting as much as 85% of the general population at some point of time in their life while the estimated overall prevalence is about 46% **(2,3)**

It is a regional pain problem characterized by trigger points which are small and sensitive areas in skeletal muscles that spontaneously or upon compression causes pain to a distant region, known as the referred pain zone and present with restricted range of motion, motor dysfunction and sometimes autonomic phenomena **(4,5)**. MPS is diagnosed solely on patient's symptoms and clinical examination findings. It has a characteristic referred-pain pattern, focal twitch responses in the taut bands of involved muscles, restricted range of motion and muscle weakness **(6)**.

For quantitative evaluation of myofascial pain, it is important to measure muscle tenderness. Pressure algometry has proved to be useful in the evaluation of myofascial trigger points **(7,8)**. Pressure pain

thresholds can be measured with a pressure algometer for objective evaluation of pain sensitivity **(9,10,11)**. Pressure algometry involves induction of a specific pain in response to a measured force applied perpendicularly to the skin. Pressure threshold is defined as the minimum pressure which induces pain or discomfort. The purpose of the present study was to establish values for the pressure threshold meter over muscles which are frequently afflicted by trigger points. In our study, we measured the pressure pain threshold for evaluation of pain sensitivity.

In our study, we did a quantitative analysis of MTrP frequently found in regional myofascial pain syndrome by pressure algometer and correlated pain intensity with quality of life.

MATERIAL AND METHODS

Participants are selected from the outpatient clinic of physical medicine and rehabilitation department, SMS Medical College and Hospital, Jaipur. Approval for the study was given by institutional Research Review Board and Ethical committee at SMS Medical College and Hospital, Jaipur. It was a cross-sectional descriptive observational study.

The sample size was calculated at 95% confidence level (alpha error 0.05) assuming the standard deviation of the total myofascial score of 12 points at 4 kg/cm2 among patients with chronic pain as found in reference study. At the precision (absolute available error) of 4 kg/cm2, minimum 81 patients are required as the sample size for the present study, which is enhanced and rounded off to 100 patients as final sample size.

The patient who had regional neck or dorsal myofascial pain for 3 months or more duration was included in this study. Patients who fit into American College of Rheumatology 2010 criteria for fibromyalgia were excluded from the study. Patients who had any psychiatric, medical or surgical issues which would interfere with study protocol.

Pressure pain threshold was measured among 12 areas of the neck and upper back frequently afflicted by trigger points, using pressure algometer. Pressure pain threshold was measured in bilateral upper trapezius, levator scapulae, supraspinatus, infraspinatus, teres major and deltoid muscles. The dial type pressure algometer (orchid scientific algometer model- ALGO-D-01), was used, calibrated in kg/cm2 with a range up to 20kg. The foot plate area of pressure algometer was 1 cm2. After a preliminary trial on the forearm, pressure pain threshold was recorded for each area. We then placed the pressure algometer on a site to be inspected and pressed on the skin in a vertical direction while increasing the force at a constant rate of 1 kg/cm2. We instructed the patients to express pain when a slight pain was felt. Three readings were taken from all the muscle areas with a rest of five minutes in between. The average of minimum 2 values was calculated. Pressure pain threshold value 4 kg/cm2 or less was used as the reference threshold value for MTrP **(12)**.

Fig. Pressure algometer

Pain intensity is measured by the short form McGill pain questionnaire (SF-MPQ-2). The short-form McGill Pain Questionnaire (SF-MPQ) was developed for quick evaluation of subjects **(13)**. SF-MPQ-2 is a reliable, valid, and sensitive pain questionnaire that can be used in medical research as well as for routine clinical evaluations **(14)**. It has a full range of clearly defined items applicable in the evaluation of both neuropathic and non-neuropathic pain **(15)**. The SF-MPQ-2 is composed of 22 items which investigate continuous descriptors, intermittent descriptors, neuropathic descriptors and affective descriptors of pain. The range of score for

each item was 0 to 10. 0 scored with no pain, 10 scored the worst pain ever felt. The Hindi version of SF-MPQ-2 was used in our study with due permission. The total score was calculated as a mean of all SF-MPQ-2 items rating.

Evaluation of Quality of life is conducted with 36-item short form survey instrument (SF-36). It measures the functional health status in eight dimensions: physical functioning, role limitations due to physical health problems, physical pain, social functioning, general mental health (psychological distress and psychological well-being), role limitations due to emotional problems, vitality (energy/fatigue), and general health perceptions. It can be divided into two aggregate summary measures, the physical component summary and the mental component summary **(16,17,18)**. All questions are scored on a scale from 0 to 100, with 100 representing the highest level of functioning possible. The scores from each dimension are averaged together and a final score is calculated as a percentage for the respective dimension.

Pearson's correlation analyses are performed by using the Statistical Package for Social Sciences (SPSS version 25) and P = 0.05 was considered statistically significant. Quantitative data is calculated by computing the mean and standard deviation (SD) for parametric data.

Observations

A total of 100 subjects were recruited, out of which 42 were male and 58 were female. Ages of participants were between 16 to 78 years (mean age= 40.2 years). Maximum numbers of patients were in the age group of 26-55 years (65%). Nearly 47% of cases were housewives whereas student constitutes 10%, businessman 8%, computer job 7%, laborers 2% and the remaining 26% to other occupation.

Participants included in the study were having at least one MTrP (ppt <4kg/cm2) in the studied muscles. The most prevalent MTrPs were identified in the upper trapezius muscle (79% and 76%) followed by levator scapulae (45% and 41%), supraspinatus (27% and 19%), infraspinatus (18% and 11%), and deltoid (13% and 6%) and teres major (9% and 6%) right and left side respectively. A significant correlation was found between pain intensity and quality of life. The patients with higher pain intensity had lowered the quality of life. The patients with lower PPT value have higher pain intensity and increase duration of pain but correlation with pain duration was statistically non significant. The patients with high pain intensity have higher PDI and were associated with decreased quality of life.

Table 1- Correlation matrix between pain intensity and quality of life

		Physical functioning	Physical Health	Emotional Health	Energy	Emotional Well Being	Social Functioning	Pain	General Health
Pain Intensity	**Pearson Correlation**	-.212*	-.308**	-.321**	-.344**	-.513**	-.371**	-.495**	-.270**
	Sig. (2-tailed)	0.034	0.002	0.001	0	0	0	0	0.007
	N	100	100	100	100	100	100	100	100

* Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Table 2- Correlation matrix between Mean PPT and Quality of life (SF-36)

		Physical functioning	Physical Health	Emotional Health	Energy	Emotional Well Being	Social Functioning	Pain	General Health
Mean PPT	**Pearson Correlation**	.340**	.428**	.339**	.299**	.231*	.234*	.274**	.242*
	Sig. (2-tailed)	0.001	0	0.001	0.003	0.021	0.019	0.006	0.015
	N	100	100	100	100	100	100	100	100

* Correlation is significant at the 0.05 level (2-tailed)

**Correlation is significant at the 0.01 level (2-tailed)

Table 3- Correlation matrix between Pain disability index (PDI) and Quality of life (SF-36)

		Physical functioning	Physical Health	Emotional Health	Energy	Emotional Well Being	Social Functioning	Pain	General Health
Pain Disability Index	**Pearson Correlation**	-.309**	-.417**	-.276**	-.574**	-.696**	-.599**	-.522**	-.544**
	Sig. (2-tailed)	0.002	0	0.005	0	0	0	0	0
	N	100	100	100	100	100	100	100	100

**Correlation is significant at the 0.01 level (2-tailed)

DISCUSSION

The myofascial pain is one of the common and a painful event of nearly everyone's life. The symptoms in patients with myofascial pain ranges from excruciating pain caused by an active trigger point to a painless restriction of movements and distortion of posture due to latent trigger points that are frequently overlooked. Sensitivity to pain in patients with TrPs has been measured as the pressure pain threshold, is relatively objective. Pressure algometer is useful for making a measurement of pressure pain threshold at a TrP site so the initial tenderness can be compared to measurements following the therapeutic or experimental intervention.

MPS can cause prolonged morbidity and a significant reduction in QOL and is one of the major causes of time lost from work **(19)**. Sahin **(20)** et al assessed the SF-36 sub scores of patients with MPS and found that the role, pain, and energy scores were distinctly low. Patients with MPS had the worse health-related quality of life than healthy individuals in terms of pain, energy, physical mobility, sleep, and emotional reactions **(21)**.

Myofascial pain can be seen at every age, however, it is especially more prevalent in women of the childbearing age **(20,22,23)**. We had similar observations in our group. The age range of patients with MPS was a 16-78 (mean, 40.2 yrs) years which was similar to those found in other studies.

The myofascial trigger points frequently seen in upper trapezius muscle (79%) among the studied muscles. It is reported that the most prevalent MTrP was found in the trapezius muscle **(4,22,25)**.Similarly, Sola et al (24) have reported the frequency of TPs as 84.7% in trapezius. This study also shows that increased frequency of MTrPs was found in upper trapezius followed by levator scapulae, supraspinatus, and infraspinatus.

Pressure algometer has been used in various researches to measure pressure pain threshold (PPT). Fisher et al **(7)** reported pressure pain threshold value in normal person upper trapezius 4.8 kg/cm2, levator scapulae 5.2 kg/cm2, supraspinatus 6 kg/cm2, infraspinatus 6.9 kg/cm2, teres major 6 kg/cm2 and deltoid 7.3 kg/cm2. Giburm Park (30) reported a value of 4.2 kg/cm2 and 4.5 kg/cm2 in upper trapezius and infraspinatus muscles in MPS.

This study shows a relatively low value compared to reported in other papers (table 1). The PPT values were lower in right side than left in the studied group. Cerezo-Tellez E **(4)**, Travell JG **(5)**, Gibrum Park (26), Sahin N **(22)** reported that the pressure pain thresholds in the right sides were statistically significantly lower than those in the left sides.

Pain intensity was inversely correlated with quality of life (QOL) parameters physical health, emotional health, energy, emotional well-being, social functioning, bodily pain, general health (p-value <.01) and physical functioning (p-value <.05). As patients with higher pain intensity had lower QOL parameters. Reyhan Celiker et al **(19)** found that in myofascial pain syndrome, with the SF-36 parameters physical functioning, the physical role, social functioning, bodily pain, general health, vitality, emotional role, and mental health scores were found to be significantly lower. Tuzun et al **(27)** compared the QOL scores of patients with FMS and MPS and concluded that MPS impacted mostly on physical health, whereas fibromyalgia impacted on both physical and mental health. B. S. Laursen et al **(28)** reported a significant correlation between pain intensity and the impairment of quality of life.

Despite the lack of validated diagnostic criteria for the identification of MTrPs **(3,5,29)** the diagnostic criteria used in our study are commonly used in scientific studies and in clinical practice. The use of trained experienced examiners makes these criteria highly reliable. Although experience and training do contribute to improved reliability, we may have introduced a potential bias as only one examiner collected the data, which could be considered a limitation of our study. Future studies may want to consider having multiple examiners, which unfortunately was not possible in our clinical setting.

Further study is needed to enumerate and define normative data of the local population. Different scales used in the study should be compared to improve the reliability of the results. Further studies can use these parameters in pre and post-treatment study groups and can also compare different treatment modalities.

CONCLUSION

Patients with MPS should receive a multi-dimensional systematic evaluation. Pressure algometer is a useful tool in identification and quantification of MTrPs and to compare therapeutic and experimental events. The most prevalent MTrP in the neck and upper back is in the upper trapezius muscle. In chronic regional Myofascial pain, higher pain intensity is associated with lower quality of life.

REFERENCES

1. Dundar U, Solak O, Samli F, Kavuncu V. Effectiveness of ultrasound therapy in cervical myofascial pain syndrome: a double-blind, placebo-controlled study. Turkish Journal of Rheumatology. 2010 Sep 1;25(3):110-6.
2. Fleckenstein J, Zaps D, Rüger LJ, Lehmeyer L, Freiberg F, Lang PM, Irnich D. Discrepancy between prevalence and perceived effectiveness of treatment methods in myofascial pain syndrome: results of a cross-sectional, nationwide survey. BMC musculoskeletal disorders. 2010 Dec;11(1):32.
3. Simons DG. Clinical and etiological update of myofascial pain from trigger points. Journal of musculoskeletal pain. 1996 Jan 1;4(1-2):93-122.
4. Cerezo-Téllez E, Torres-Lacomba M, Mayoral-del Moral O, SánchezSánchez B, Dommerholt J, Gutiérrez-Ortega C. Prevalence of myofascial pain syndrome in chronic non-specific neck pain: A population-based cross-sectional descriptive study. Pain Medicine. 2016 Jun 20;17(12):2369-77.
5. Travell JG, Simons DG. Myofascial pain and dysfunction: the trigger point manual. Lippincott Williams & Wilkins; 1983.
6. Graff-Radford SB. Myofascial pain: diagnosis and management. Current Pain and Headache Reports. 2004 Dec 1;8(6):463-7.
7. Fischer AA. Diagnosis and management of chronic pain in physical medicine and rehabilitation. Ruskin–Current Therapy in Physiatry. 1984:123-45.

8. Reeves JL, Jaeger B, Graff-Radford SB. Reliability of the pressure algometer as a measure of myofascial trigger point sensitivity. Pain. 1986 Mar 1;24(3):313-21.

9. Merskey H, Gillis A, Marszalek KS. A clinical investigation of reactions to pain. Journal of Mental Science. 1962 May;108(454):34755.

10. Merskey H, Spear FG. The reliability of the pressure algometer. British Journal of Social and Clinical Psychology. 1964 Jun;3(2):130-6.

11. Keele KD. Pain-sensitivity tests: the pressure algometer. The Lancet. 1954 Mar 27;263(6813):636-9.

12. Granges G, Littlejohn G. Pressure pain threshold in pain-free subjects, in patients with chronic regional pain syndromes, and in patients with fibromyalgia syndrome. Arthritis & Rheumatism: Official Journal of the American College of Rheumatology. 1993 May;36(5):642-6.

13. Melzack R. The short-form McGill pain questionnaire. Pain. 1987 Aug 1;30(2):191-7.

14. Adelmanesh F, Jalali A, Attarian H, Farahani B, Ketabchi SM, Arvantaj A, Raissi GR. Reliability, validity, and sensitivity measures of expanded and revised version of the short-form McGill Pain Questionnaire (SF-MPQ-2) in Iranian patients with neuropathic and non-neuropathic pain. Pain Medicine. 2012 Dec 1;13(12):1631-8.

15. Dworkin RH, Turk DC, Revicki DA, Harding G, Coyne KS, PeirceSandner S, Bhagwat D, Everton D, Burke LB, Cowan P, Farrar JT. Development and initial validation of an expanded and revised version of the Short-form McGill Pain Questionnaire (SF-MPQ-2). PAIN®. 2009 Jul 1;144(1-2):35-42.

16. Ware Jr JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36): I. Conceptual framework and item selection. Medical care. 1992 Jun 1:473-83.

17. Ware Jr JE, Kosinski M, Bayliss MS, McHorney CA, Rogers WH, Raczek A. Comparison of methods for the scoring and statistical analysis of SF-36 health profile and summary measures: summary of results from the Medical Outcomes Study. Medical care. 1995 Apr 1: AS264-79.

18. McHorney CA, Ware Jr JE, Lu JR, Sherbourne CD. The MOS 36-item Short-Form Health Survey (SF-36): III. Tests of data quality, scaling assumptions, and reliability across diverse patient groups. Medical care. 1994 Jan 1:40-66.

19. Çeliker R, Atalay A, Guven Z. Health-related quality of life in patients with myofascial pain syndrome. Current pain and headache reports. 2010 Oct 1;14(5):361-6.

20. Sahin N, Karataş O, Ozkaya M, Çakmak A, Berker E. Demographics features clinical findings and functional status in a group of subjects with cervical myofascial pain syndrome. The journal of the Turkish Society of Algology. 2008 Jul;20(3):14-9

21. Bal S, Çeliker R: Health-related quality of life in patients with myofascial syndrome: a controlled clinical study. J Musculoskel Pain 2009, 17:173–177.

22. Sahin N, Atik A, Dogan E. Clinical and demographic characteristics and functional status of the patients with fibromyalgia syndrome. Northern clinics of Istanbul. 2014;1(2):89.

23. Buskila D, Abramov GA, Biton AM, Neumann LI. The prevalence of pain complaints in a general population in Israel and its implications for utilization of health services. The Journal of rheumatology. 2000 Jun;27(6):1521-5.

24. Sola AE, Bonica JJ. Myofascial pain syndromes. The management of pain. 1990;1:352-67.

25. Wang G, Gao Q, Hou J, Li J. Effects of temperature on chronic trapezius myofascial pain syndrome during dry needling therapy.

Evidence-Based Complementary and Alternative Medicine.2014;2014.

26. Park G, Kim CW, Park SB, Kim MJ, Jang SH. Reliability and usefulness of the pressure pain threshold measurement in patients with myofascial pain. Annals of rehabilitation medicine. 2011 Jun 1;35(3):412-7.

27. Tüzün EH, Albayrak G, Eker L, Sözay S, Daşkapan A. A comparison study of quality of life in women with fibromyalgia and myofascial pain syndrome. Disability and Rehabilitation. 2004 Feb 18;26(4):198-202.

28. Laursen BS, Bajaj P, Olesen AS, Delmar C, Arendt-Nielsen L. Health-related quality of life and quantitative pain measurement in females with chronic non-malignant pain. European journal of pain. 2005 Jun;9(3):267-.

29. Simons DG. Review of enigmatic MTrPs as a common cause of enigmatic musculoskeletal pain and dysfunction. Journal of electromyography and kinesiology. 2004 Feb 1;14(1):95-107.

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