

SHORT COMMUNICATION

A COMPARATIVE STUDY BETWEEN DIFFERENT PAIN RATING SCALES IN PATIENTS OF OSTEOARTHRITIS

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Abstract : Study was conducted to assess the sensitivity and simplicity of various pain rating scales in patients of osteoarthritis with chronic pain so that most appropriate scale can be identified. Scales included were Wong-Baker Faces Pain Rating Scale (WBS), Numerical Rating Scale (NRS), Faces Pain Scale- Revised (FPS-R), Visual Analogue Scale (VAS) and Verbal Rating Scale (VRS). Patients were asked to indicate their pain on these scales and comment about the simplicity of scales. Median mark for WBS, NRS, FPS-R, VAS and VRS was 10, 10, 10, 9.1 and 10 respectively. P value between WBS, NRS, FPS-R, VAS and VRS was insignificant. Most simple, easy to answer scale (83%) was WBS followed by FPS-R (17%). We conclude that all the scales are sensitive for assessment of the chronic osteoarthritis pain and are not different from each others. The most simple and preferred pain rating scale is WBS for the regional population.

Key words : pain rating scale chronic pain osteoarthritis

INTRODUCTION

Pain is a subjective phenomenon which is difficult to define exactly although we know what we mean by it. Osteoarthritis with persistent pain is one of the commonest problems of old age which is mainly managed by anti-inflammatory drugs. Numerous pain

rating scales are available for measurement of pain which are the tools that help to evaluate pain and measure its levels and intensity. The most widely used scales are visual, verbal, and numerical or sometimes combination of all three forms. But for the measurement of pain in osteoarthritis, the preferred pain scales still remained debatable (1).

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We planned the present study in the tribal district tertiary care centre of Andhra Pradesh India to assess the sensitivity and simplicity of various pain rating scales in patients of osteoarthritis of this region which have predominantly tribal and rural population, so that the most appropriate scale can be identified for the regional population.

METHODS

Present study was carried out at Rajiv Gandhi Institute of Medical Sciences (RIMS) Adilabad, a north Telangana tribal district tertiary care centre of Andhra Pradesh. Known cases of osteoarthritis with chronic pain, attending orthopaedic OPD were included in the study. Diagnosis was made by the subject expert. A total of 30, 18 male and 12 females cases were selected randomly after taking informed consent. They were in between the age group of 45 to 70 years (Mean age - 56 years). Permission for the study was granted by the institutional authorities.

Five different pain rating scales with questionnaires included in the study were Wong-Baker Faces Pain Rating Scale (WBS) (2), Numerical Rating Scale (NRS) (3, 4), Faces Pain Scale- Revised (FPS-R) (2, 3, 5), Visual Analogue Scale (VAS) (2, 3, 4) and Verbal Rating Scale (VRS) (4). They were asked to indicate their pain on these scales and were also asked to comment about the simplicity of the scales.

Wong-Baker faces pain rating scale (WBS) :

In this pain rating scale six faces, from 0 to 5 were used in a paper sheet.

- A. **Face 0** is very happy face (no hurt at all)
- B. **Face 1** is still smiling (hurts just a little bit)
- C. **Face 2** is still not smiling (hurts a little more)
- D. **Face 3** is starting to frown (hurts even more)
- E. **Face 4** is definitely frowning (hurts a whole lot)
- F. **Face 5** is crying, hurts as much as you can imagine, although you don't have to be cry to choose this face (hurts the worst)

The patients have to mark the face which best describe their intensity of pain. Face 0 was given 0 marks while face 1, 2, 3, 4 and 5 were given 2, 4, 6, 8 and 10 marks respectively.

Numerical rating scale (NRS) :

It consists of a series of numbers ranging from 0 to 10. Number 0 denotes no pain while 10 as worst possible pain. The patients were asked to choose the number that best describes the intensity of pain which they are feeling. We considered 0 as no pain while 1 to 3 as mild, 4 to 6 as moderate and 7 to 10 as severe pain.

Faces pain scale - revised (FPS-R) :

It consists of six faces from left to right side in which extreme left face shows no pain while extreme right face shows very

much pain. This scale does not contain smile or tear on faces. The patient has to choose the corresponding face according to his or her feeling of pain. Scoring was done from 0 to 10 as faces were counted from left to right side of the scale.

Visual analogue scale (VAS) :

It consists of a 10 cm horizontal line whose extreme ends were marked as no pain on the left side and worst pain on the right side. The patients were asked to place a mark on the line which represents the level of their pain.

Verbal rating scale (VRS) :

In this scale, four perpendicular lines were marked on a horizontal line. Lines from left to right side were denoted with the words no pain, mild pain, moderate pain and severe pain respectively. Patients have to mark the pain which they are feeling. A score of 0 was given to no pain while 3, 6 and 10 scores were allotted to mild, moderate and severe pain respectively.

Statistical analysis :

One way ANOVA test followed by Newman-Keuls multiple comparison post test were applied using Prism software, version 5.03 (Trial) to make the comparison in between all the pain rating scales.

RESULTS

In the present study we observed 10, 10, 10, 9.1 and 10 as the median mark for WBS, NRS, FPS-R, VAS and VRS respectively. When all the pain rating scales were

compared with each other there was no statistically significant ($P < 0.05$) difference between all the scales (Table I). According to the patients the most simple 83 % (25) and easy to answer pain rating scale was WBS followed by FPS-R 17% (5) and the least preferred were NRS, VAS and VRS.

TABLE I: Inter comparison between all the pain rating scales.

	WBS	NRS	FPS-R	VAS	VRS
Mean (Standard Deviation)	9.4 (1.19)	9.3 (1.02)	9.27 (1.34)	9.2 (1.63)	9.1 (1.1)
Standard Error of Mean	0.22	0.19	0.24	0.30	0.2
Lower 95% Confidence Interval	8.96	8.92	8.77	8.59	8.7
Upper 95% Confidence Interval	9.85	9.68	9.77	9.81	9.5

No statistically significant difference was observed between all the scales.

DISCUSSION

As far as sensitivity is concerned we found all the scales sensitive and WBS as most preferred scale among the study population. Nicholas Bellamy et al (6) also suggested that severity of osteoarthritis pain can be evaluated using a variety of self-administered pain scales which are capable of detecting improvements in health status following effective drug therapy. CJ Newman et al (2) found moderate to good correlation and moderate agreement between VAS, WBS and the FPS- R in children while Kim EJ and Buschmann MT (7) observed FPS and NRS as more effective scales in older adults. Li L et al (3) observed good reliability and validity of all four pain rating scales (FPS-R, NRS, VDS and VAS) and FPS- R as best preferred scale without any significant

difference as far as age, gender and educational level is concerned. Williamson and Hoggart (4) found VAS, VRS and NRS as valid, reliable and appropriate scales for use in clinical practice and NRS has good sensitivity while VRS is simple. Thus almost all the authors have common opinion that the above five different pain rating scales can be used to evaluate and monitor the various types of pain.

Our study population preferred WBS it might be because of the region which is a tribal/cum rural district. It is a government centre where majority of the patients are from lower socioeconomic category with relatively high illiteracy rate. WBS offers a visual description which is useful for those who don't have the verbal skills to

explain intensity of their pain. NRS, VAS and VRS cannot be used in all patients since they may be ineffective in patients who have cognitive or motor problems and elderly patients while FPS- R is relatively difficult scale.

Conclusion

We conclude that all the pain rating scales are sensitive and useful for the assessment of chronic osteoarthritis pain and are not different from each others. The most simple and preferred pain rating scale among the patients of this region is WBS. WBS can be used routinely to assess the pain intensity during the management of chronic osteoarthritis pain in elderly patients of the region.

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