

Clinical Article

Use of quantitative assessment scales in cervical spondylotic myelopathy – survey of clinician’s attitudes

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Summary

Background. There is considerable uncertainty regarding the selection criteria of patients and timing of surgery for cervical spondylotic myelopathy (CSM). Attempts have been made to quantify CSM severity using various assessment scales to provide an adjunct to clinical decision-making. The aim of the present study was to determine, by means of a 7-item questionnaire the attitudes of clinicians regarding the importance of quantitative assessment scales in the management of CSM, their actual use in clinical practice and how current scales fall short of the ideal.

Findings. Clinical history, examination, radiological imaging and quantitative functional assessment were regarded by 117 clinicians as being almost equally important in the management of CSM. However, only 22 (19%) of clinicians admitted to using an assessment scale in clinical practice and 4 (3%) believed there was a ‘gold-standard’ assessment scale. These clinicians also considered ‘ease of use’ to be the most important attribute of an ideal assessment scale, followed by ‘reproducibility’, ‘sensitivity to change’ and ‘validity’.

Conclusions. The discrepancy between the importance attached to quantitative measurement and its actual use suggests that current scales are under-utilised or unsuitable for clinical practice. A new easy-to use scale may be required that better reflects clinical requirements.

Keywords: Cervical spondylotic myelopathy; assessment scales and clinician views.

Introduction

Cervical Spondylotic Myelopathy (CSM) is a common cause of morbidity in the middle aged and elderly population [1, 2, 4, 5]. A major difficulty with the management of this condition is that its often slow and insidious course coupled with the potential hazards of surgery can result in uncertainty concerning the timing of surgical intervention [1, 2, 4, 5, 12]. Current evalua-

tion of CSM generally involves subjective and non-standardised assessment of patients [8, 9, 15]. Although a variety of assessment scales have been described, its use in quantifying CSM disease severity appears to be variable in clinical practice [1, 9, 14, 16]. Partly as a result, clinicians vary greatly in their timing and selection practices for surgery in CSM [9, 12–14].

The aim of the present study was therefore to survey the clinicians’ current attitudes to the assessment of CSM severity. It was considered important to look at the practices of all clinicians potentially involved, including neurologists, geriatricians and General Practitioners (GPs) rather than just surgeons, because such clinicians determine initial referral patterns. In addition, the extent of the use of quantitative assessment scales clinically in CSM patients was surveyed. Finally, an attempt was made to ascertain in what way the existing scales fail to meet the clinicians’ requirements.

Methods

A 7-item postal questionnaire (Appendix) was sent out to 180 clinicians, involved in the management of CSM. The names of 30 Neurologists, 40 Neurosurgeons, 40 Orthopaedic spinal surgeons, 20 Rheumatologists, 20 Geriatricians and 30 General Practitioners, each were randomly selected from the members list of the British Cervical Spine Society and from clinicians referring patients to our unit. Initial non-responders were re-circulated after 2 months.

The main points of interest were: (i) the relative importance of different methods of CSM severity assessment, (ii) the important qualities of an assessment scale for CSM, (iii) whether or not the clinicians considered a ‘gold standard’ assessment scale to exist already, and (iv) the current use of assessment scales in clinical practice.

Comparison of the responses of different groups of physicians was carried out using Kruskal Wallis test. The null hypothesis was rejected at a significance level of $p < 0.05$. All tests were performed on the SPSS statistical package (Statistical Programs for the Social Sciences, Chicago, USA).

Results

Responses to the questionnaire were received from 117 (65%) of clinicians contacted, including 18 (15%) Neurologists, 36 (31%) Neurosurgeons, 30 (26%) Orthopaedic spinal surgeons, 8 (7%) Rheumatologists, 7 (6%) Geriatricians and 18 (15%) GPs.

When asked to rate the best way to assess function in CSM (question 2), the overall index of importance of the five parameters ('history', 'examination', 'imaging', 'quantitative assessment' or 'unknown/don't know'), was determined by requesting the clinicians to rank these parameters in order of importance, 4 being the most useful and 0 the least useful. The scores of all clinicians were then summed for each parameter and divided by the number of clinicians to give a 'normalised score' where, for example, a final result of 4 would indicate that it had been ranked top by each clinician. Data analysed in this way revealed that there was little difference between 'history', 'clinical examination', 'imaging' and 'quantitative assessment' (Table 1). Thus, overall, no parameter stood out as being more important than the other.

Further analysis revealed that there were differences between the clinical specialities regarding the relative importance of the best way to assess function in CSM (question 2; Fig. 1). In particular, GPs were less sure about the best way to assess CSM (Fig. 1; $p < 0.001$; Kruskal Wallis test).

When asked about the criteria used to decide on surgical intervention (question 3), the clinicians mentioned appropriate history (N = 68; 58%), examination findings (N = 51; 44%), loss of function/disability (N = 51; 44%),

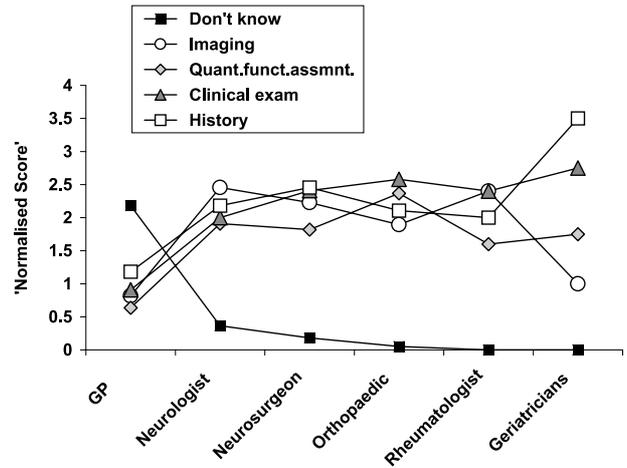


Fig. 1. Figure showing differences in the clinicians attitudes towards the usefulness of different parameters in the assessment of CSM (N=117). Each parameter was scored between 4 (most useful) to 0 (least useful) and 'normalised scores' are shown. GP's (N = 18) were more unsure of CSM assessment than the Neurologists (N = 18), Neurosurgeons (N = 36). Orthopaedic surgeons (N = 30), Rheumatologists (N = 8) and Geriatricians (N = 7) ($p < 0.001$; Kruskal Wallis test)

MRI findings (N = 46; 39%), disease progression (N = 26; 22%) and bladder dysfunction (N = 15; 13%) (question 3).

When asked about the use of assessment scales in CSM (question 5), only 22 (19%) of clinicians admitted to using a variety of assessment scales in clinical practice. The Nurick scale (N = 6) was the one most commonly used and other scales included, Japanese Orthopaedic Association Score (N = 4), Short form 36 (N = 4), Functional Independence Measure (N = 4), Barthel Index (N = 3), Myelopathy Disability Index (N = 2), Walking test (N = 1), European Myelopathy Score (N = 1), Button test (N = 1) and Quality of Life Years (N = 1) [3, 7, 10, 11, 13, 14, 16, 17]. None of the GPs or Neurologists admitted to using such scales in clinical practice. Clinicians not using assessment scales gave a variety of reasons, including lack of time, non familiarity, difficult to apply and lack of usefulness.

Only 4 (3%) clinicians believed there was a 'Gold standard' assessment scale for CSM (question 4) and they cited different scales: the European Myelopathy Score, the Nurick and the Functional Independence Measure questionnaire (question 4). Only 3 (3%) clinicians based their clinical decisions (i.e. whether to undertake surgery) on quantitative assessment scales, whilst 42 (36%) reported that assessment scales were more useful for research/academic purposes (question 7).

On rating the qualities of an ideal assessment scale that would be useful in clinical practice (question 6), the

Table 1. Table demonstrating the 'normalised scores' and median values for the different parameters considered useful in the assessment of CSM, by 117 clinicians. Each parameter was scored between 4 (most useful) to 0 (least useful)

	'Normalised score'	Median value
Clinical history	2.15	2
Clinical examination	2.18	2
Imaging findings	1.90	2
Quantitative functional assessment	1.78	2
Don't know	0.45	0

Table 2. Table demonstrating the 'normalised scores' and median values for qualities considered important in an assessment scale of CSM, by 117 clinicians. Each parameter was scored between 4 (most important) to 0 (least important)

	'Normalised score'	Median value
Ease of use	1.48	1
Reproducibility	1.34	0
Sensitivity to change	1.16	0
Validity	1.01	0

overall index of usefulness of the four parameters ('validity', 'reproducibility', 'sensitivity to change' and 'ease of use'), was determined by requesting the clinicians to rank these parameters in order of importance: 4 being the most important and 0 the least. The scores of all the clinicians were then summed for each parameter and divided by the number of clinicians to give a 'normalised score'. Data analysed in this way revealed that 'ease of use' was ranked highest, followed by 'reproducibility', 'sensitivity to change' and finally 'validity' (Table 2; question 6).

Discussion

This study confirms that current assessment of the severity of CSM in patients is subjective and non-standardised [2, 4–9, 12, 15]. Interestingly, the clinicians surveyed in this study felt that quantitative functional assessment to be an important factor in assessing function in patients with CSM. Moreover, many clinicians considered the loss of function, disability and disease progression as important pointers for surgical intervention. However, even though this is what assessment scales purport to measure, we observed a low level of use of quantitative assessment scales (19%) to monitor CSM severity in clinical practice. Moreover, a variety of different scales were employed and there was a lack of agreement on which scale was best to use (i.e. the 'gold standard') in assessing CSM disease severity.

This discrepancy between theory and actual practice suggests, that quantitative scales are valued but currently available assessment scales do not meet the clinicians' requirements. Existing assessment scales were felt to be time consuming, cumbersome and difficult to apply. In this respect, it was instructive to note that the clinicians surveyed felt that 'ease of use' to be the most important attribute of an assessment scale, followed by reproducibility. Current assessment scales were viewed to be more useful for research purposes and not for day to day clinical use.

GPs and other non-surgical clinicians were also surveyed in this study because the attitudes of such clinicians may be an important factor influencing the referral practices and thus the timing of surgical intervention. There was a greater reluctance to the use of quantitative assessment scales among these physicians. However, it must be noted that these clinicians are more likely to focus upon history, examination and imaging findings, rather than assessment scales, as the former are important in the initial diagnosis of CSM. Moreover, the overall response rate to the questionnaire was 65% and this varied among the different clinical specialities from 35% (geriatricians) to 90% (neurosurgeons). This can introduce bias in the study and may reflect the frequency with which CSM is encountered by these clinicians.

Nevertheless, the low rate of usage of assessment scales in the management of CSM is regrettable. Assessment scales have the advantage of quantitating baseline function in patients, observe disease progression and to assess the impact of surgical and medical treatments. Moreover, assessment scales can be used to monitor the progress of patients post-operatively and to detect any deterioration at an early stage. While the data generated by assessment scales can be used in research studies, it can also be extremely useful for surgeons and non-surgical clinicians to chart progress in individual patients.

Several, of the assessment scales currently available for quantitating CSM disease severity are lengthy, time consuming and impractical to apply in the routine clinical practice [1, 9, 14, 16]. Moreover, there are differences between these scales in terms of reliability, validity and responsiveness to change [1, 14]. Given the present climate of evidence based healthcare and the need to demonstrate clinical effectiveness by regular audit, it would seem timely to consider the development and application of simpler assessment scales such as the 'Walking test' that better reflect the clinician's and patient's needs in CSM [13].

Appendix: questionnaire used

1. Your Speciality.
2. What in your opinion is the best way to assess function in Cervical Spondylotic Myelopathy (CSM) patients? Please rank your choice on a 0 to 4 scale (0 being the 'least useful' and 4 being the 'most useful'): History, Clinical Examination, Imaging, Quantitative functional assessment, Unknown/Don't know.
3. What information do you use to make a decision to undertake surgery or to refer the patient to a surgeon in CSM patients?
4. Do you believe there is a "Gold Standard" assessment scale for assessing Cervical Spondylotic Myelopathy? If YES, which?

5. Do you use any assessment scale(s), if YES which one and if NO, please give reasons.
6. Please rate the qualities of an assessment scale that makes it most useful in your practice. Rank your choices on a scale of 0 to 4 (4 being the 'most important' and 0 being 'least important') for the following qualities of a assessment scale: Ease of use, Reproducibility, Sensitivity to Change and Validity.
7. Are assessment scales purely of academic interest and do you base clinical decisions on the score, or neither?

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Comments

The authors survey clinicians from a variety of backgrounds on their approach to assessment of cervical spondylotic myelopathy. A variety of approaches are available for quantifying disease severity, but the survey shows that there little agreement among clinicians over which assessment is best and none appears to be widely used. Research studies and management of CSM patients could potentially be greatly improved by agreement on standard approaches to assessing the effects of the disease. Experience with other neurological diseases shows that good definitions of severity are important for effective communication between clinicians, for planning clinical trials, and for allocating resources. Assessing the functional consequences of CSM is one such approach, and it has the advantages of objectivity, simplicity, and the fact that it reflects differences in outcome that are meaningful to the patient. The authors' own scale – the 'Walking test' – may be a suitable functional assessment. However, currently quantitative functional assessment is not often used. The authors have identified an important gap in current practice, and the need for further work to establish a consensus on ways of defining disease severity among clinicians with an interest in CSM.

Lindsay Wilson
Stirling

The purpose of this paper is to survey the clinicians' current attitudes to the assessment of CSM severity. This was done by sending a questionnaire composed of seven questions to 30 Neurologists, 40 Neurosurgeons, 40 Orthopaedic spinal surgeons, 20 Rheumatologists, 20 Geriatricians and 30 General Practitioners comprising 180 clinicians. The doctors were randomly selected from a members list of the British Cervical Spine Society as well as from clinicians referring to the authors unit. This is a rather heterogeneous group of doctors, on the one hand "spine-specialists" – members of the Cervical Spine Society, on the other hand, referring physicians without special interest in spinal diseases. The overall response rate is as low as 65% – comparing the response rate among the different groups, the rate among the Neurosurgeons was as high as 36/40, compared to 7/20 in the Geriatricians. So the results depend upon the opinion and answers of a heterogeneous limited sample.

In Question 3 the physicians are asked about the decision making for surgical intervention or referring the patient to a surgeon – these are two totally different items. To advise the patient on surgery, you have to take into account all the information you can get and you have to discuss this with the patient. However, a referring physician has the obligation to send the patient to the specialist to get this advice! Therefore the results to this special question should be as heterogeneous, as they were.

All of us are interested in the problem of when to operate on patients suffering from CSM, and how to monitor the progress of the disease. That assessment scales are used very infrequently, mostly by groups interested in research, is widely known. However the authors are right in their conclusion that the development and application of a simpler assessment scale that better reflects the clinicians and patients needs is necessary. This paper perhaps stimulates discussion and research.

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Giessen

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