ORIGINAL ARTICLE

Clinical use of Malay Version of Vertigo Symptom Scale (MVVSS) in Patients with Peripheral Vestibular Disorder (PVD)

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SUMMARY

Introduction:The Vertigo symptom scale (VSS) is a well established tool for the evaluation of vestibular disorders and the associated symptoms of autonomic arousal and somatosensation. By using a validated Malay version of vertigo symptom scale (MVVSS) questionnaire, the severity of the vertigo from patients' perspective can be determined and rated. Before MVVSS can be applied clinically among Malaysians, it was of interest to determine its clinical value in identifying vestibular disorders.

Method: Forty normal and 65 PVD subjects participated in this cross-sectional study. Normal subjects were recruited amongst Universiti Sains Malaysia (USM) staff and students who had no history of ear and vestibular disorders.

Results: Mean total score of MVVSS in normal and PVD subjects were 13.9 ± 11.1 and 30.1 ± 20.9, respectively. When the total scores of normal and PVD group were compared, the Mann-Whitney U test showed that there was a significant difference between the two groups ($p<0.05$). This is consistent with previous studies. It was also of interest to see if subtypes of PVD [benign paroxymal positional vertigo (BPPV), Meniere's disease, labyrinthitis and unknown] have different MVVSS results. However, analysis of variance (ANOVA) found no significant difference in term of outcomes of MVVSS among the different PVD pathologies. Using receiver operating characteristic curve (ROC) method, the sensitivity and specificity of MVVSS were 71% and 60%, respectively.

Conclusion: MVVSS is able to discriminate clinically among the normal and PVD subjects. However, it is not a good indicator for differential diagnosis of PVD subtypes, at least in this study. Its sensitivity and specificity in clinical diagnosis are reasonably high. Perhaps a bigger sample size would be useful to further study the clinical usefulness of MVVSS.

KEY WORDS:
Malay version Vertigo symptom scale; Vertigo symptom scale; Clinical used; Vertigo; Peripheral vestibular disorder; Sensitivity; Specificity

INTRODUCTION

The Vertigo symptom scale (VSS) (Appendix 4) by Yardley *et al.*[2] is one of the disease- specific subjective questionnaires to quantify balance disorder, somatic anxiety, and autonomic severity symptoms[2]. The VSS has been translated into seven other languages, apart from English; Dutch, French, German, Spanish, Swedish, Turkish and Malay[1,3,4].

The usefulness of this questionnaire in identifying patients with vestibular disorders has been demonstrated elsewhere[5]. For instance, a study by Holmberg *et al.*[5] found that normal and labyrinthine disordered subjects produced lower scores when the dizziness handicap inventory (DHI) questionnaire was used. In contrast, subjects experiencing phobic postural vertigo had higher scores, indicative of greater impairment or disability.

Clinical diagnosis and objective tests of balance disorder alone are inadequate for assessing the severity and impact of a patient's dizziness. Utilizing a symptom-specific subjective measurement is essential in accurately identifying the symptoms and status of patients, as well as being helpful in deciding further treatment methods, aiding clinical judgment and disease monitoring. As mentioned previously, the VSS is a well established tool for the evaluation of vestibular disorders and the associated symptoms of autonomic arousal and somatosensation. VSS also focuses on all the primary and secondary symptoms of vestibular disorder, including anxiety and autonomic symptoms[2,4].

By using this self-administrated questionnaire, patients with vestibular disorders are able to express and score their recent and current symptoms or problems. Items of the VSS address symptoms which might have been overlooked in the initial appointment with the clinician. The majority of the items linked to the autonomic symptom in the VSS are related to vertigo rather than other subtypes of dizziness[6]. Autonomic symptoms such as nausea and vomiting are typical features of PVD[6].

Detailed measurement of dizziness and its related symptoms will guide clinicians in making an accurate diagnosis and specifying the site of lesion[6]. For clinical purposes it is valuable if the clinician has a clear view and cut off

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Table I: Inclusion and exclusion criteria for normal and PVD subjects

Normal subjects	
Inclusion criteria	**Exclusion criteria**
1. Normal and healthy subjects without any balance and hearing disorders or other chronic diseases. 2. Subjects aged 18 years and above.	1. Subjects with hearing, balance disorder and chronic diseases 2. Subjects aged below 18 years.
Peripheral vestibular disordered subjects	
Inclusion criteria	**Exclusion criteria**
1. PVD patients (i.e. Benign Paroxysmal Positional Vertigo (BPPV), Meniere's diseases, Poorly Compensated Peripheral Vestibular Disorder (PCPVD) & benign recurrent vertigo) 2. Patients aged 18 years and above.	1. Patients with central lesion and/or central vestibular disorders. 2. Patients aged below 18 years.

Table II: Demographic data of PVD subjects (n=65)

Variable	n (%)
Mean age	49.11 months(15.008)[a]
Age range:	
10-19	1 (1.5)
20-29	9 (13.8)
30-39	8 (12.3)
40-49	15 (23.1)
50-59	14 (21.5)
60-69	12 (18.5)
70-79	6 (9.2)
Gender	
Male	16 (24.6)
Female	49 (75.4)
Race	
Malay	56 (86.2)
Chinese	8 (12.3)
Other	1 (1.5)

a mean (SD)

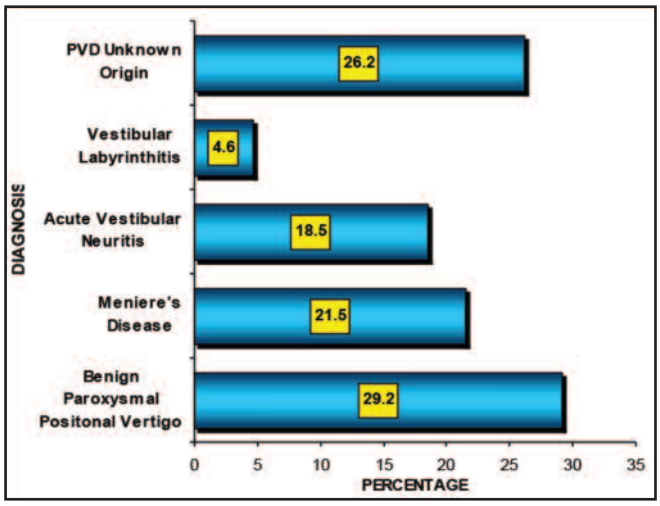

Fig. 1: Percentage of types of PVD in the study.

point/level as to whether patients solely have a vestibular disorder or if the condition is mixed with psychological elements such as anxiety disorder or depression[7].

Furthermore, detailed information regarding the duration of particular symptoms is really important for the clinician to have a clear idea of the course of the disease and to narrow down the symptoms accurately[8]. For example, in Meniere's disease, questions regarding the patient's quality of life are used to monitor and evaluate the patient's status during the treatment course[9].

The VSS has been used as an assessment tool for dizzy patients who have undergone vestibular rehabilitation. In one study[10], research participants were randomly selected from 20 general practices in Southern England. In this interventional study, primary care nurses gave instruction and explanation in two home visits to all participants. Results of this study indicated some improvement of the patient's symptoms; handicap and balance control[10].

Having a clinical questionnaire such as VSS is clearly useful. Recently, Zuraida *et al.*[1] developed a Malay version of VSS (MVVSS). The MVVSS has proven to be valid and reliable after undergoing several validity and reliability measures[1]. Since the MVVSS is now available for clinical use among the Malaysian population, it was of interest to see its clinical value in identifying vestibular disorders. Hence, this study was carried out to determine the cclinical usefulness of MVVSS among patients with PVD.

OBJECTIVE

The aims of this study were to compare MVVSS outcomes between normal participants and subjects with peripheral vestibular disorder (PVD) and to measure the sensitivity and specificity of MVVSS in identifying PVD.

MATERIALS AND METHODS

We recruited 40 normal subjects and 65 PVD subjects provided that they met the inclusion criteria (Table I). Normal subjects were recruited among university staff and students. Subjects with PVD were recruited from the Otorhinolaringology (ORL) clinic of Hospital Universiti Sains Malaysia (HUSM).

Detailed demographic data for these 65 subjects are described in Table II. A majority of the PVD cases were from the 4th decade, female and Malay. As shown in Figure 1, among the total of 65 subjects, the highest number of diagnosis was for BPPV (29.2%) and the lowest was for vestibular labyrinthitis (4.6%). The number of subjects with PVD of unknown origin was the second highest (26.2%).

All subjects were informed and asked to participate in the study by qualified medical personnel. Voluntary participation was stressed, confidentiality guaranteed and instructions given about all the procedures. Written consent was obtained and all subjects were asked to fill the MVVSS questionnaire accordingly (Appendix 1) with no time constraint. Medical personnel were around to provide them with assistance as required.

RESULTS

The mean total score of MVVSS in normal subjects was 13.9 ± 11.1. In PVD subjects, the mean total score was 30.1 ± 20.9. At first glance, it seems that the PVD subjects have higher scores of MVVSS than the normal group. To ascertain this finding, statistical analysis such as independent t-test (parametric test) or Mann-Whitney U test (non-parametric analysis) should be carried out to confirm whether the two groups have different scores. Prior to this, the normality test (i.e., Shapiro-Wilk test) was conducted and it showed that the data for both groups were significantly skewed ($p<0.05$). Therefore, the non-parametric test (i.e. Mann-Whitney U test) was chosen for the analysis.

When the total scores of normal and PVD group were compared, the Mann-Whitney U test showed that there was a significant difference between the two groups ($p<0.05$). This supports the observation that PVD subjects have higher total scores as compared to the normal subjects.

b) Analysis of this MVVSS outcome among the different pathologies showed that there is no significant (p value > 0.05) difference in terms of outcomes of MVVSS among the different PVD pathologies.
c) Using receiver operating characteristic (ROC) method, the sensitivity and specificity of MVVSS were 71% and 60% respectively.

DISCUSSION

The statistical analyses indicated that PVD subjects had significantly higher scores when compared to the normal group. This suggests that PVD patient experienced more vertigo and somatic-anxiety symptoms than the normal group. This outcome is expected because obviously PVD subjects are the 'sufferers' and they tend to give higher scores because their symptoms are significant. This finding is also consistent with that of previous studies which utilized self-assessments[11].

There is no significant difference in terms of MVSS scores between different pathologies, indicating that there is no significant clinical differences between them. This is most likely due to the small number of recruited subjects where almost all the recruited PVD subjects had a similar clinical status and level of chronicity.

There are marked differences in terms of the sensitivity and specificity values for this MVSS. According to the ROC and manual method, the sensitivity was 71% and 31% and the specificity was 60% and 93% respectively. Comparatively, the ROC method showed high sensitivity and is more practical clinically as there is only one optimum cut off point selected automatically on the final data analysis.

There are two possibilities for the lower sensitivity of the manual method.

Firstly, almost 30% of the the PVD patients were later diagnosed as having BPPV. This has implications on the sensitivity of the MVVSS.

In BPPV cases the symptom of vertigo is really short and lasts only a few seconds. If patients are successfully treated by a physician, they will recover almost completely[12]. This is the reason why most of the patients in this study showed a lower score which was similar to the scores obtained by normal subjects. Secondly, newly diagnosed cases were reported as not experiencing other associated symptoms such as anxiety, palpitation and other chronic symptoms of vertigo. The lack of such symptoms leads to low scores on the MVVSS.

MVVSS is one of the subjective measures of dizziness and somatic anxiety symptoms. It uses a 5-point Likert scale (0-4) and subjects were asked to score the severity of their symptoms for each item. In this situation, the higher the score, the more severe the disease.

Based on these three different categories the MVVSS showed good subjective measures that was able to discriminate between normal and abnormal patients. Apart from that, the MVVSS also showed high sensitivity and specificity values that makes it a valuable tool for the clinician to use among patients with vestibular dizziness or vestibular disorders.

Based on the MVVSS results, a clinician is able to justify whether a patient has a pure vestibular disorder or if there are any other associated medical illness such as hypotension or psychological disorders[4]. By knowing the actual symptoms reported by patients, the appropriate management can be carried out. For example, if the patient does have a pure vestibular disorder, he/she can benefit from the typical medication and/or physical exercises that aim to reduce the vestibular symptoms. In contrast, if he/she shows more psychological involvement (with or without vestibular symptoms), referral to a psychiatrist or psychologist can help overcome the symptoms. Once the problems have been rectified, the patient will then be referred to the otologist or physician for treatment of the vestibular symptoms. This strategy is important because it has been shown that to achieve rapid recovery from vestibular symptoms, the psychological aspects must be treated first[13].

In conclusion, the MVVSS is able to provide clear differentiation between a pure vestibular dosorder and a disorder associated with other medical and/or psychological symptoms. Thus use of this questionnaire will have a significant impact on subsequent treatment given to patients. The MVVSS is a useful tool in clinical evaluation and offers many advantages over other tools that are currently is use for the purpose of assessing vestibular disorders.

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