OBJECTIVE BALANCE ASSESSMENT OF CLAUDICANTS UNDERGOING ANGIOPLASTY

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INTRODUCTION

Intermittent claudication is common and associated with reduced levels of physical function [1]. Impaired physical function and, in particular, balance are recognized risk factors for falls [1,2]. Falls among the elderly are associated with high morbidity and cost [3]. The aim of this study was to objectively assess balance using dynamic posturography among elderly claudicants, both before standard treatment for claudication by angioplasty and at 3 and 12 months post treatment.

METHODS

Nineteen claudicants (14 men), median age of 67 (IQR 62-73) years, underwent objective balance assessment, using the Sensory Organization Test (SOT) [4] following full informed consent and in accordance with hospital, university and local ethics approval. SOT determines body sway relative to the maximum limits of stability under different sensory conflict conditions to assess the contribution of each sensory system (vestibular, somatosensory and visual systems). The overall balance score or "composite equilibrium SOT score" is calculated from the weighted sum of average scores for each sensory conflict condition tested. Abnormal balance is determined by a composite SOT score lower than 95% of normative age-matched controls. SOT testing was carried out prior to angioplasty, and at 3 and 12 months post treatment. Subjects also completed a "fear of falling" assessment (Activities Balance Confidence scale or ABC) [5].

RESULTS AND DISCUSSION

Overall 9/19 (47%) of claudicants in this study demonstrated abnormal balance using the composite equilibrium SOT score. Of these, 14 patients had persistently normal (8) or abnormal (6) balance. The remaining 5 patients had composite SOT scores which fluctuated between normal and abnormal over time; 2 patients improved, 1 deteriorated and 2 showed temporary improvement, which had then deteriorated by the final follow up at 12 months. Figure 1 represents the study cohort's composite SOT scores over time.

Vestibular dysfunction occurred in 47% (n=9) of participants. Abnormalities of somatosensory (26%, n=5), visual function (37%, n=7) and preferential reliance on inaccurate visual cues (26%, n=5) were less common. Vestibular dysfunction showed transient improvement at 3 months post angioplasty in 4 patients, although this persisted in only 2 patients at 12 months. Somatosensory dysfunction showed transient improvement at 3 months in only 2 patients.

Prior to angioplasty there was no significant correlation between fear of falling (ABC score) and composite SOT score (Spearman rank correlation r=0.439, p=0.068). Although at 12 months a high correlation between fear of falling and composite SOT score was found (Spearman rank correlation r=0.616, p=0.005).

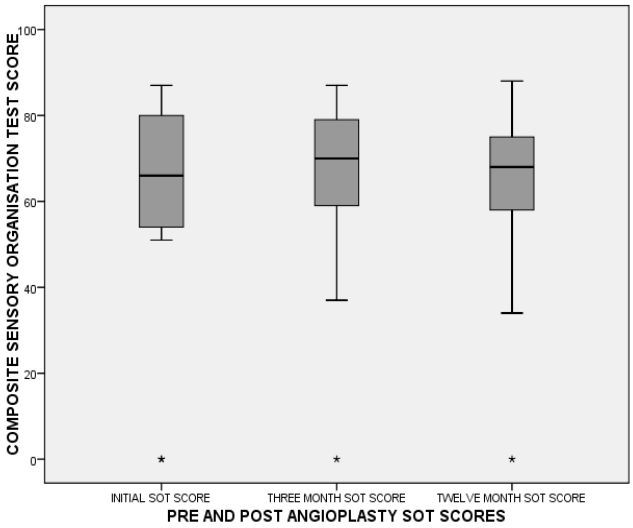

Figure 1: A Box and Whisker plot for Sensory Organization Test (SOT) scores pre and post treatment by angioplasty. Boxes represent interquartile range with median value represented by the thick horizontal line.

CONCLUSIONS

Impaired balance, particularly secondary to vestibular problems, is very common in claudicants, which may predispose to a high incidence of falls. Pre-treatment claudicants with abnormal balance are not more likely to be afraid of falling than subjects with normal balance, but after 12 months of inclusion in this study a correlation between abnormal balance and fear of falling was demonstrated. It may be assumed that as a consequence of participation, patients' awareness of their falls risk was heightened during the study. This in itself may be of value in preventing falls if patients are more aware of potential hazards.

Standard treatment of claudication by angioplasty does not alter balance in 75% of patients. Therefore alternative interventions or strategies to improve balance in this high risk group must be sought to avoid unnecessary falls and fall related morbidity.

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