Reviewer’s report

Title: Vestibular asymmetry predicts falls among elderly patients with multisensory dizziness

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Reviewer: Jasmine Menant

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This cohort study investigated predictors of falls related to sensory function, balance and dizziness handicap, among older people suffering from multisensory dizziness presenting to a vertigo and dizziness physiotherapy clinic.

The paper is concise and well-written with clear aims. The methods appear sound and the conclusion support the results presented. A strength of the study is the prospective falls follow-up used. Some further methodological details are required. Please see below some comments.

Minor Essential Revisions

Methods

1. It is not clear from the “study population” paragraph if all consecutive patients presenting to the clinic with multisensory dizziness were invited to participate or, if patients presenting to the clinic with multisensory dizziness and showing sensory impairment on further screening were then invited to participate.

2. The authors mention in the introduction that BPPV is the most frequent cause of dizziness amongst older people. Given this evidence, had BPPV been ruled out for all the patients included in the study, prior to inclusion?

3. Throughout the main text and abstract, the median age is given without a measure of spread; please specify the inter-quartile range.

4. Why if the focus was on sensory function not having included a test of vision?

5. In both the abstract and methods of the main text, when referring to the “tuning fork”, I would suggest replacing “sensory status” which could refer to any sense, with “vibration sense” which is more precise.

6. For both tests of “walking a modified figure of eight” and “walking heel to toe on a line”, a measure of the distance walked or approximate number of steps required to complete the test, should be provided.

7. In the paragraph describing “postural sway” and in Table 2, the sway area unit should be “mm2”, not “mm2/sec”.

8. Were the circumstances of the falls questioned at the different follow-up time points? The falls definition chosen in this study should be specified; was the definition from Lamb et al (JAGS., 2005) used (“A fall was defined as 'an unexpected event in which the person comes to rest on the ground, floor, or
lower level”) or the one from the Kellogg working group (Dan Med Bull; 1987) (“unintentionally coming to the ground or some lower level and other than as a consequence of sustaining a violent blow, loss of consciousness, sudden onset of paralysis as in stroke or an epileptic seizure”) used? Or another one? Please specify.

9. The authors chose to use odds ratios to describe the relationship between the various independent variables and the falls outcome. Relative risks are easier to interpret and preferred to odds ratios which tend to overestimate risk of common events such as fall occurrences. What was the rationale for using odds ratios?

Tables
1. For all the data presented in tables, please provide a measure of the spread for the age variable in Table 1, and for all of the physiological variables in Table 2.
2. In Table 2, please specify that “steps outside the line” were the units used to record performance in the “Figure of eight” and the “Walking heel to toe” tests.
3. In Table 2, please specify that all the measures of sway which units are “mm/sec” are “sway velocity” measures.
4. The “Mediolateral sway eyes open” and the “Anteriorposterior sway eyes open” are included twice in Table 2.

Level of interest: An article whose findings are important to those with closely related research interests

Quality of written English: Acceptable

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I declare that I have no competing interests