Reviewer's report

Title: Does muscle weakness affect plantar pressure in diabetic polyneuropathy?

Version: 1 Date: 10 December 2007

Reviewer: Claudia Giacomozzi

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OVERALL COMMENTS

The topic is of great clinical interest and relevance, and the paper may contribute to gain deeper knowledge in the alteration of the biomechanics of the diabetic neuropathic foot.

Leg muscle performances are investigated under isometric conditions instead of the commonly observed isokinetic conditions, and this could help in avoiding some masking effects due to inertial phenomena. Besides that, an interesting theory is proposed to link neuro-muscular disorders of diabetic neuropathic patients to the onset of the well-known abnormal plantar pressures under the forefoot.

The study is well designed and clearly described in the manuscript.

It deserves publication on MBC Musculoskeletal disorders, even though it has two weak points which should be better addressed. In case the two questions cannot be answered at this stage of the study, they should at least be clearly and honestly stated and discussed in the paper.

Briefly, the two points are:

1) There is a general lack of technical details - accuracy, precision, resolution, reliability, etc of the measurement instrumentation and techniques which partly prevents from the deep understanding of the quality and reliability of the presented data.

2) The number of patients and healthy controls is poor indeed. Such a well designed study deserves to be extended and validated over a wider number of patients and controls.

Besides that:

The authors deal with a quite new and well defined question.

The methods are appropriate.

The manuscript adheres to the relevant standards for reporting. Figures and Tables might be improved by an editing revision.

The discussion and conclusions are well balanced and adequately supported by the data.

The title and abstract accurately convey what has been found.

The overall manuscript is well written and readable.
- MAJOR COMPULSORY REVISIONS (which the author must respond to before a decision on publication can be reached)

1. Technical relevant details should be added for each measurement instrumentation and technique used in the study. Technical limitations should be clearly reported, and the way they may affect the obtained data well addressed in the paper.

2. Spatial resolution of the pressure platform - 2 sensors/cm² is too low to allow accurate peak pressure detection under the ten selected areas. It does affect and mask the detection of very high peak pressures. This limitation should be taken into account and clearly addressed when interpreting pressure data.

3. Limitations due to the little number of recruited patients should be better discussed when interpreting the overall data set.

- MINOR ESSENTIAL REVISIONS (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

4. BMI should be included in Table 1, since it is an important factor in diabetic patients, more important than body mass alone.

5. Arrows in Figure 1, as they are now, are a bit confounding.

6. Figures 3 and 4 should contain standard deviation of each reported curve or, in case median instead of mean values are used, they should contain 25-75° percentiles.

- DISCRETIONARY REVISIONS (which are recommendations for improvement but which the author can choose to ignore)

7. Normalisation of Moment of force: it was normalised with respect to body mass. Being a normalisation a procedure which usually delivers relative numbers i.e. pure numbers without Units a moment of force might be normalised with respect to (body weight * height) and be expressed as a percentage of Nm. It would be useful to better describe the rationale for the adopted normalisation.

8. The term torque in the figures might be replaced by the more general term moment of force.

9. Due to the limited number of patients included in each group, the median values instead of the mean values might be used for data analysis. There is no evidence, in fact, that the gait parameters related to the 8 or 10 patients of each group are normally distributed. A brief discussion might be also added about the opportunity to extend the study to a wider population.

What next?: Accept after minor essential revisions

Level of interest: An article of importance in its field
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