Reviewer's report

Title: Age-related increases in parathyroid hormone may be antecedent to both osteoporosis and dementia: a clinical study

Version: 2 Date: 4 February 2009

Reviewer: Noboru Horiuchi

Reviewer's report:

X- Minor Essential Revisions

The author can be trusted to make these. For example, missing labels on figures, the wrong use of a term, spelling mistakes.

Comments:

This is a good study at which the authors give important results that patients with high PTH levels show statistically significantly lesser P300 latency. They describe that PTH with delayed P300 latency may become putative biological markers of dementia and osteoporosis. These results contain new information which is important for clinical medicine, and the manuscript is well written. However, the authors must respond to specific comments described below.

Specific comments;

1. What are molecular mechanisms of delaying neural processing speed by PTH? The authors should discuss how PTH affects to blunt cognitive function in central nervous system (CNS)? Are there PTH receptors in CNS? Can PTH go through blood-brain barrier?

2. Page 5, paragraph 2, line 1; What is Path? This should be defined.

3. Page 7, Test of Normality; Figure 3 and 4 are the same. Figure 3 looks like data on Distribution of PTH.

4. Page 9, Number 4 of Table 2; PHT may be PTH.

5. Page 12, Title of Table 6; Bone D should be BMD.

6. Page 14, paragraph 2, line 2; OP may be osteoporosis. This abbreviation should be defined.

7. Page 15, line 3-6; Do teriparatide injections delay onset of dementia? Please explain this issue. Relationship between teriparatide injections and GH treatment is argued in detail.

8. Page 19, last reference; Number (28) is missing.

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

Quality of written English: Acceptable
**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I have no competing interest.