Reviewer's report

**Title:** Serum homocysteine levels are decreased in levothyroxine-treated women with autoimmune thyroiditis.

**Version:** 2  **Date:** 2 January 2014

**Reviewer:** Tommy Kyaw-Tun

**Reviewer's report:**

This interesting study attempts to address whether TPO status is related to Hcy level in the presence of euthyroidism. Overall the study may be re-considered however quite a number of major and minor issues need to be addressed.

Overall the main difficulty is that whilst a hypothesis is present, it is unclear from the results and discussion whether their hypothesis was affirmed or revoked, mainly because it is unclear whether comparisons for Hcy levels were done between TPO +ve untreated euthyroid (pre-clinical phase) patients had higher Hcy cf controls.

(A) Major Compulsory Revisions

**ABSTRACT**

Ln 30-32: why is Hcy of interest?

Ln 34: How was Hashimoto's thyroiditis - can one safely assume that all patients with Hashimoto's thyroiditis had positive TPO Abs?

Ln 35: Healthy controls - were they all negative for TPO status? (these have to be clarified and addressed in methods section of main body also.)

Ln 42-44 - so what is the significance of there being no difference in Hcy between non-treated HT and control. and if non-treated HT was not higher - does it matter that Hcy is lower in the treated group?

**Table 1**

a, b - what are these comparisons? between which pairs of groups or are they different p values e.g. <0.05 and <0.01?

**MAIN BODY**

Ln 72-74: are there references re: GFR / liver metabolism and Hcy levels

Ln 91-40: TPO status for each group should be clearly stated.

Ln 122: Were any comparisons made between all the HT (treated and untreated with LT4) and controls? if not then the Mann-Whitney test does not need to be used - since all the results were comparisons between 3 groups?

Ln 140: was there a difference in Free T4 between non-treated HT and controls?

Ln 142: was there a difference in Hcy between non-treated HT and controls?
any differences between the treated and non-treated groups? Neither Figure 2 nor the table is clear about this.

Ln 149-153: are the authors proposing that Hcy levels be used to either diagnose HT (Fig 4) or whether they are adequately treated (Fig 3)? what is the reason for doing the ROC.

(B) Minor Essential Revisions
ABSTRACT
Ln 40: TPOAbs titers were apparently higher (?) (also in line 140) do the authors mean to omit the word apparently?
Ln 122-134: Statistics - there are 4 paragraphs in this section.
Ln 172: state what is HOMA
Ln 224: cost - founded(?) do the authors mean funded?
MAIN BODY
Ln 61: homocystynuria(?) do the authors mean homocysteinaemia?
Ln 64: Up to date(?) do the authors mean To date?

(C) Discretionary Revisions

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

Quality of written English: Needs some language corrections before being published

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests