Reviewer’s report

Title: Comparative study of cognitive development in children with compensated hypothyroidism

Version: Date: 15 January 2006

Reviewer: Nicholas Jospe

Reviewer’s report:

General

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

1) In the introduction on page 5, the second paragraph talks about "overt" and then "compensated" hypothyroidism. A sentence is needed to articulate the difference between "overt hypothyroidism" and "compensated hypothyroidism" and whether these are related, and importantly for the general reader, whether compensated hypothyroidism has any clinical metabolic hypothyroid relevance. The last two sentences of the introduction are confusing. "This study evaluated cognitive..." is also a bit odd, in tempo and in placement within this paragraph. It makes sense to state that cognitive function will be examined, but the rest of the sentence might imply that the effect of thyroxin therapy on OTHER outcomes will be evaluated. This is a confusing statement of hypothesis, with little stated specific background to support such a distinction between attention and visual processing and visuo-motor integration versus verbal processing and academic achievement. As well, when the reader gets to the paragraph on page 11 "The two children who were off thyroxin at baseline..." it will seem as thought the hypothesis will have been written to fit the data. Hence, the hypothesis might be rewritten in more general terms?

2) Methods: subjects: it would be helpful to state at the outset if it was all hypothyroid patient charts that were reviewed, and if so how many, and of what ages. This does come up later, but it could be here as well.

3) Methods protocol; there is a potential problem with obesity. Obese children can have mild elevations of TSH, and normal T4, and it is important to state how or whether these were included or not.

4) Methods protocol; what is the difference, in terms of hypothyroid pathology and consequence on cognitive function, between children initially on thyroxin therapy who remain euthyroid 6-8 weeks after discontinuation, versus those who require resumption of therapy, after these 6-8 weeks, presumably because of thyroid function test results. The further confusion appears on page 10, when it is stated that of the 5 subjects in group 2, 2 were placed back on treatment, and 3 were not. Were these 3 therefore subjects now to be considered normal, with only past thyroid function tests possibly abnormal. The bottom line is that the presumed differentiation between these different clinical groups is difficult to maintain.
5) discussion. p 15. this section begins by talking about ADHD. This has not come up so far. Nor has it been stated whether children with ADHD have a greater prevalence of thyroid disease or compensated hypothyroidism. adding an introduction to this concept will help.

6) page 16, bottom of page, "Thus by current laboratory standards...considered normal" this is all confusing because these are the 5 that constitute group 2. and if 3 of these five are on therapy, are the other two therefore normal children?

Discretionary Revisions (which the author can choose to ignore)

1) In the introduction, there is a sentence that begins with "Song et al. showed..." this sentence says that function is ...affected by factors associated with etiology of disease..." and the next sentence says "...affected by etiology..." All of this is unclear, and for the purpose of this publication, is either not really needed, or if desired, must be made more explicit and clear.

2) p16, middle paragraph."for children with congenital disorders....the pattern of data seen here clearly... " This seems overstated.

3) the conclusion is perhaps a bit overstated, regarding significant deficits in attention, given that there was no control population for these same measures in this study.

What next?: Accept after minor essential revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests: 
'I declare that I have no competing interests'