Reviewer’s report

Title: Thyroid function, body mass index, and metabolic risk markers in euthyroid adults: a cohort study

Version: 0 Date: 26 Jan 2019

Reviewer: Szu-Tah Chen

Reviewer's report:

The manuscript entitled "Thyroid function, body mass index and metabolic risk markers in a cohort study of euthyroid adult population" reported a positive association of body mass index (BMI) with serum TSH, free triiodothyronine (fT3), fT3/free thyroxine (fT4) ratio (fT3/ fT4) and a negative association with fT4 in 16,975 Chinese subjects according to multivariable regression analysis adjusted for age and gender. The authors also observed associations of TSH with fasting blood glucose (FBG) and triglyceride (TG); associations of fT3 with systolic blood pressure (SBP), low-density lipoprotein cholesterol (LDL-C); associations of fT4 with diastolic blood pressure (DBP), FBG, hemoglobin A1c (HbA1c), TG and high-density lipoprotein cholesterol (HDL-C); and associations of fT3/ fT4 with FBG, HbA1c, TG and HDL-C. The authors concluded that body weight and obesity co-morbidities may be regulated by the hypothalamic-pituitary-thyroid axis through sophisticated and as yet incompletely understood mechanisms.

Suggestions and critiques:
1. Did the study exclude pregnancy and subjects with autoimmune thyroid disease?
2. The statement of "correlation between thyroid hormones and metabolite components" in the "Result" section is confusing; for example, TSH did not significantly associated with BMI (Tab. 1); fT3/ fT4 did not inversely associated with FBG; also homocysteine did not inversely associated with fT3 and fT3/ fT4 (Tab. 2).
3. Please illustrate Tab. 2 in landscape view.
4. Please list the range of the quartiles of TSH, fT3, fT4 as well as fT3/ fT4 in Tabs. 3 and 4; please also illustrate the range of the quartiles of TSH, fT3, fT4 as well as fT3/ fT4 in normal weight group in Tab. 3.
5. Please discuss the effect of thyroid hormone on glucose homeostasis, blood pressure and homocysteine Pleasein further detail.
6. Please follow the author's instruction in the format of the manuscript (such as format of the references, tables and figures as well as their legends).
7. Please use 118,540, 3,908, 114,632…etc.
8. Please give the full name terminology before the abbreviation such as shown in lines 126-128.
9. Please improve the English writings by a native English speaker.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

No

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

Not relevant to this manuscript

Quality of written English
Please indicate the quality of language in the manuscript:

Needs some language corrections before being published

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