Reviewer's report

Title: Antioxidant enzymes activities in obese Tunisian children

Version: 1 Date: 25 October 2012

Reviewer: Pilar Codoñer-Franch

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Original article

Sfar et al test the hypothesis that cell antioxidant enzymes, superoxide dismutase (SOD), glutathione peroxidase (GPx) and catalase (CAT) can be modified in obese children. To this end, the authors investigated the SOD, GPx and Cat activities in erythrocytes of 106 children between 6 and 12 years old (53 obese and 53 control) and found that SOD activity were significantly higher in obese children whereas GPx and Cat activities were not affected by body mass index. They did not find association of enzymatic levels with other metabolic abnormalities.

The design and presentation are clean overall. Although I believe that this paper have a potential interest and is confirmatory of the findings previously reported by other authors, not are provided very new data.

My main concerns are as follows:

MAJOR COMPULSORY REVISIONS

Abstract: A sentence that summarizes the main conclusion of the study is needed. The conclusion stated by the authors is not derived of the data of the present work

Background: I think that the aim of the work was to investigate the effect of childhood obesity on cell antioxidant enzymes. In this manner, the aim exposed by the authors “defining the early oxidant damage and the opposite response in obese children” is out of the scope of the present paper.

Methods:

1. Subjects:
   a. I do not understand what the authors mean when they say “healthy educated children” Did they mean “healthy controlled children”?
   b. The number of obese girls + boys are 54 (instead of 53), and the number of control girls+ boys are 52 (instead of 53)
   c. This is a study in a scholar population. How was made the selection of the subjects to obtain the same number of obese and control children?

2. Statistical analysis:
   a. A verification of normality of data is desirable before the application of
parametric test.
b. Due the wide range of age it could be preferable to test association between variables using partial correlation adjusted by age.

3. Results
a. It is preferable to express the blood pressure as z-score referred to the height, using standard methodology as it is recommended by The Fourth Report on Blood Pressure in Children (National high blood pressure education program working group on high blood pressure in children and adolescent. The fourth report on the diagnosis, evaluation, and treatment of high blood pressure in children and adolescents. Pediatrics 2004;114:555–76).
c. The authors confirm the normal health status (absence of comorbidities?) in children by the results of glucose, total cholesterol and triglycerides. However, a frequent comorbidity in obesity is insulin resistance and this condition is not rule out in the present study.

4. Discussion:
a. There is a contradictory sentence (Page 8, first paragraph “Cases of exogenic obesity were not considered…” In fact the inclusion criteria in the present study was exogenic obesity.
b. Several recent studies have been previously published exploring the relationship between cell antioxidant enzymes and obesity/comorbidities (i.e. hypercholesterolemia) in children and should be reported in the list of references (Woo J, Shin KO, Yoo JH, Park S, Kang S. The effects of detraining on blood adipokines and antioxidant enzyme in Korean overweight children. Eur J Pediatr. 2012 Feb;171(2):235-43. Codoñer-Franch P, Bataller Alberola A, Domingo Camarasa JV, Escribano Moya MC, Valls Bellés V. Influence of dietary lipids on the erythrocyte antioxidant status of hypercholesterolaemic children. Eur J Pediatr. 2009 Mar;168(3):321-7). A comparison between the results obtained in these recent studies and the present study should be also provided.
c. The discussion can be simplified and shortened.

5. References:
a. Only three references (of de 30 total) are dated in the last five years. Please change to more recent references.

6. Tables
a. Please homogeneize the format. In Table 1 are “controls” in Table 2 are “normal -weight”. In Table 2 add the number of subjects in each group. The same remark in Table 3.

MINOR ESSENTIAL REVISIONS:
Page 4, line 5 “crushing’s syndrome”. Is Cushing’s syndrome?

General:
I strongly recommend the manuscript to be reviewed by a professional proofreader in order to improve the attention to smoother phrasing and finer points of style.

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

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

No conflict of interest