Reviewer's report

Title: Microarray gene expression profiling of subcutaneous adipose tissue in obesity: Distinct expression of cell-cycle- and differentiation-related genes

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Reviewer: Antonio Zorzano

Reviewer's report:

In this manuscript the authors have performed focused microarrays assays in subcutaneous adipose tissue from lean and morbidly obese (nondiabetic) subjects. The methods used are appropriate. The data indicate a number of genes that are dysregulated in adipose tissue in morbid obese subjects, which may be relevant to understand some of the pathophysiological traits associated to this condition. A major weakness of the study is that it does not go any further in any of the identified dysregulated genes. There are a number of points that deserve some attention.

Major compulsory revisions:

1. The title should indicate that the study was done with morbid obese subjects, and that the microarrays were focused (only 319 probes).

2. I understand that the authors made the microarrays by spotting the different cDNA probes. What controls did they use to validate the microarrays they made?

3. The genes found dysregulated in microarrays were further validated by real-time PCR in a second set of lean and morbid obese subjects. I do find some problems in the selection of male morbid obese (shown in table 2) as some of them are diabetic. This may explain why there is not complete agreement in the gene expression shown in Figures 3 and 4 in female and male morbid obese subjects. Diabetic subjects should be discarded from the study.

4. I do not understand the rationale for including data on gene expression from ob/ob mice. These data should be omitted as they are not useful to the major stream of the manuscript.

5. One problem in the interpretation of the gene expression data is the cell type that is responsible for the dysregulation. The authors should study this topic at least for a group of genes.

6. Are there also changes in the expression of protein in morbid obese for, at least, some of the validated genes?

7. The manuscript provides no clue on what is the relevance for the alterations detected in the expression of some genes. They should provide some experimental evidence on this issue.
**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 declare that I have no competing interests