Reviewer's report

Title: Changed adipokine levels in colorectal tumor patients and morbidly obese patients compared to healthy controls

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Reviewer: Sabine Rohrmann

Reviewer's report:

The authors examine levels of adipokines and inflammatory markers in colorectal cancer patients, morbidly obese patients and blood donors (control group). This is an interesting approach. However, the authors could do a better job of integrating the results of the three groups.

- One of the major problems of this study is the missing information on BMI in the control group, i.e., the blood donors. The authors do not even mention this as a limitation of the study, although it is well known that the levels of almost all markers they measure is affected by obesity.

- What is the rationale for comparing MO patients with CRC patients?

- Abstract: The 2nd last sentence in Conclusions is actually a result. Same sentence: The authors use the word "increased", which should be replaced by "higher" because the study is cross-sectional and the authors do not study changes in biomarkers over time.

- Methods, p. 6: The results on BMI difference between CRC and MO would be better placed in the Results section. The same is true for the results on age in CRC group.

- Results, p. 9, 2nd parag. "A gender specific difference...". Did the author test if this difference is significant? Does this refer to results presented in Table 2?

- Results, p.9, 4th parag. "... (p>=0.01;..." Is p>=0.01 correct?

- Results, p.10, 2nd last sentence: This sentence does not make much sense. Please rephrase.

- Results, p.11, last sentence of results: How is proportionally elevated defined? How do the authors decide if something is more or less proportionally elevated?

- Figure 2 shows concentrations by stage, which should be tested by a test for trend or variance analysis. However, just computing a correlation coefficient is not sufficient.

- Table 2: The word "change" is not appropriate. Better use difference.

- Figure 1: Please show n for groups (as done in Fig. 2).

Discussion:
- P. 12, last sentence in 2nd parag.: Reference 27 might be more appropriate than ref. 21.
- P. 12, 2nd last sentence: What does "gender specific homologous BMI" mean?
- p.13: "Plasma adiponectin levels,..., are more elevated in females than in males [32]." Do the authors want to say that women have higher levels than men? If yes, just state like this. Otherwise, it suggested that both levels of women and men are elevated (compared to a third group), but levels of women are more elevated than levels of men.
- p. 14: "In further clinical studies..." Reference 31 is not a clinical study.
- p. 15, 2nd last sentence: "In many studies..." Which studies? Give some references.
- p. 15, last sentence: For resistin, there appears to be a difference by tumor grade, but no difference between rectal cancer cases and blood donors. Any idea why?
- p.18, parag. starting with "The relationship..." What is the connection between the first and the second sentence of this paragraph?

In general:
- The authors often use the words "increased", "decreased", and even "changed", which are not appropriate in cross-sectional studies. Better use "higher, lower, different".
- Are there similar clinical studies? If yes, what are there results?
- Median age of cancer patients is 20 years older than of the two other groups. Does age affect the level of the measured biomarkers? If yes, might it explain some of the observed differences?
- Strengths and limitations of this study?
- The authors hardly discuss the results of the MO patients. Why were they included? What is the benefit of this group? MO patients have much higher BMI than CRC patients and probably blood donors. How does this effect the results?
- The authors do not discuss that they did not take into account BMI and age as a confounder in their analysis.

**Level of interest:** An article of limited interest

**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.