Reviewer's report

Title: Prevalence of metabolic abnormalities in HBV related hepatocellular carcinoma in Chinese

Version: 2 Date: 20 December 2010

Reviewer: Jerry Polesel

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In this paper, The Author compared metabolic abnormalities between HBV-related liver cancer, HBV-positive subjects, and healthy controls. The paper is of potential interest; nevertheless some important issue should be addressed by the Author.

Major Compulsory Revisions

1. Statistical analysis. The Author used Tukey test in the analysis. However, this test requires observations to be independent, normally distributed, and to have homogeneity of variance (homoskedasticity). Usually, metabolic parameters do not have all these properties. Therefore, I think that a non-parametric test (e.g., Wilcoxon test) would be more appropriate. Alternatively, Tukey test could be used after a formal verification of its assumptions.

2. Results, 2nd paragraph. The sentence "The higher BMI, the higher..." seems not supported by the data reported in Table 2.

3. Discussion, last paragraph. Taking into account the case-control nature of the study, reversal causation (i.e., the fact that metabolic abnormalities were consequences of HCC or HBV infection) should be discussed.

4. Table 2. It is not clear whether the p-value reported in the tables refers to differences between strata (e.g., BMI < 24 vs BMI >= 24) or between study groups (HCC cases vs healthy controls).

5. Tables 3 & 4. When evaluating a correlation between to variables through Spearman coefficient, the magnitude of the correlation should also be considered. Indeed, r<0.3 shows a small correlation between two variables, even if p-value is below 0.05. For instance, MDA cannot be considered strongly correlated to FFA or HDL (Table 4).

6. Figure 1. It was surprising to see a significant difference in TC level between healthy controls and HCC cases. The same is for TG level between HBV-positive subjects and HCC cases. Indeed, the very high variance (as shown by error bars) should drive toward non-significant differences. To better understand the figure, the Author should: a) report the test used for comparison; b) specify what the bars represent (standard deviation or standard error?).

7. Figure 2. In the figure, a linear model was applied to evaluate the relationship between tumor size and TG/GGT level. The linear model assumes a dependent relation between a dependent variable (TG or GGT level) and an independent
variable (Tumor size). Therefore, in its present form, the model evaluates the influence of tumor size on TG/GGT level rather than the influence of TG/GGT level on tumor size. R-square is, however, very low, suggesting that other factors (other than tumor size) impact on TG and GGT levels.

Minor Essential Revisions

1. The Author should check the consistency of notation and abbreviations in the text, tables, and figure. Moreover, I think that "healthy controls" would be more appropriate than "normal controls".

2. Methods, 1st paragraph. The Author should report whether HBV-carriers and healthy controls had been matched to HCC cases, and, if so, the criteria for matching.

3. Statistical methods. All the covariates included in the multivariate logistic model as adjustments should be listed.

4. Results, 3rd paragraph. According to results reported in Table 3, ALT seemed not correlated with metabolic indicators.

5. Results, 4th paragraph. The results reported in the text do not match those shown in Table 5.

6. Discussion, 6th paragraph. Please specify that "metabolic abnormalities were positively related to the increased risk of HCC among HBV-positive Subjects".

7. Tables. The Author should state the test used for the calculation of p-value by adding footnotes to the tables.

8. Table 5. Please check column headings, as they do not match to text (see point 5).

**Level of interest:** An article whose findings are important to those with closely related research interests

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

**Statistical review:** Yes, and I have assessed the statistics in my report.

**Declaration of competing interests:**

I declare that I have no competing interests