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Serum total antioxidant capacity to discriminate benign from malignant causes of biliary obstruction

To the Editor,

We have recently read with great interest the promising article by İnce et al. (1) published in your journal that evaluates the roles of serum carcinoembryonic antigen (CEA), carbohydrate antigen 19-9 (CA 19-9), vascular endothelial growth factor receptor-3 (VEGFR-3), and total antioxidant capacity (TAC) in differentiating benign and malignant causes of obstructive jaundice. Although this study is important and intriguing in a number of ways, we feel that there are several issues that need to be clarified for a better understanding of the results presented in the authors' report.

Despite major advances in novel diagnostic modalities, the discrimination of benign from malignant causes of biliary obstruction still remains difficult. In this respect, as also suggested by the authors, TAC may be used as an adjunctive method with other laboratory markers to identify malignant causes of obstructive jaundice. Unfortunately, in the present form of the study, it is impossible to understand whether TAC levels decreased or increased in patients with biliary obstruction. This is mainly because of the unique design of the study, in which the authors did not correlate their results with the results of a control group.

The role of oxidative damage in tumoral conditions is well documented, with a large number of pathobiochemical pathways that lead to cellular neoplastic transformation and free radical DNA damage (2). As the antioxidant material in serum is a mixture of different components, TAC is generally defined as an indicator of the antioxidant capacity of the body, reflecting the sum of all antioxidant substances present in serum (3). In this respect, TAC could be a reliable biomarker for diagnostics and prognostics, especially in malignant diseases (4). But, from the results of the present study, it is obvious that there is a statistically significant increase in TAC levels in malignant patients, which is contrary to current literature data. Recent studies have proven that in neoplastic conditions, serum TAC levels decrease in conjunction with elevated lipid peroxidation levels. Decreased serum TAC levels have been shown in patients with breast cancer (5), hepatocellular carcinoma (6), multiple myeloma (7), gastrointestinal cancer (8), and endometrial cancer (9). From this point of view, we think that it would have been worthwhile if the authors had discussed this controversial situation in their patient population.

In conclusion, based on the data mentioned above, we think that it is still early for TAC to be considered a useful marker for the differential diagnosis of biliary obstruction. Further randomized controlled studies with a larger number of participants are required to provide more evidence.

Conflict of Interest: No conflict of interest was declared by the authors.

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Author's Reply

To the Editor,

We are very happy for commentator/s interest to our manuscript "Roles of serum and biliary CEA, CA19-9, VEGFR3, and TAC in differentiating between malignant and benign biliary obstructions" that published on April, 2014 issue of The Turkish Journal of Gastroenterology. In this study, our main aim was to understand the utility of serum/biliary carcinoembryonic antigen (CEA), carbohydrate antigen 19-9 (CA 19-9), vascular endothelial growth factor receptor-3(VEGFR-3), and total antioxidant capacity (TAC) tests in early differential diagnosis of malignant and benignant biliary disorders.

In their comments under the heading of 'Serum total antioxidant capacity to discriminate benign from malignant causes of biliary obstruction' that published on September, 2014 issue of The Turkish Journal of Gastroenterology they mentioned about several issues that must be clarified. At first, commentators mentioned that they didn't understand whether the TAC is increased or decreased in the biliary obstruction and concluded that this confusion may be caused from methodology of the study because of abscence of a control group. We compared the malignant group with the benignant group and TAC levels were found higher in the malignant group. Ethically, we couldn't take bile samples from healthy controls so that we could not compare the tests levels of malignant and benignant groups with normal healthy group.

As defined in the manuscript and supported by the commentator/s, TAC levels decrease in many of cancer types (1-6). Levels were found as increased in the intermediate levels of sensitivity, specificity and accuracy in the malignant group of our study. And, these resultes were about the same not only for TAC but also for the other studied tests. So that, these tests were found useless for diffential diagnosis of malignant and benignant biliary disorders and did not proposed as a useful marker in the manuscript. Statistically, for a test, it is more important having a higher sensitivity, specificity and accuracy than having a higher mean.

As mentioned in our manuscript, TAC has never been studied on this topic, so that this study may accepted as a pilot study for differentation of malignant and benignant biliary disorders and certainly future large scaled studies are necassary on this topic.

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