Influence of Liver Resection and Radiofrequency Thermal Ablation on Serum Levels of Cytokines in the Patients with Advanced Liver Cancer

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Worldwide, liver cancer (primary and/or metastatic) is the most prevalent cancer, as well as being the third most common cause of mortality and poor-prognosis malignancy due to recurrence after surgery and metastasis.

Although surgical liver resection is considered as gold standard treatment, is often limited by the extensive liver disease and medical co-morbidities in patients. For these reasons, increasing interest is developing to local ablative therapies among which a radiofrequency thermal ablation (RFA) represents relatively safe technique as described by us and others inducing localized tumor necrosis with maximal preservation of normal liver parenchyma. Immuno-modulatory effects exerted by RFA treatment in patients with liver cancer is also intensively being studied.

Influence of RFA and liver resection was studied on cytokines: IFN-γ, IL-10, IL-17 and TGF-β serum level in patients with liver cancer. Blood samples were collected from 20 patients with advanced liver cancer and 15 healthy individuals with no history of malignancies or autoimmune disorders after a month from the ablation or surgery. 10 patients were treated by RFA, 10 – undergone liver resection. The serum levels of IL-17, IL-10. IFN-γ and TGF-β were measured by enzyme-linked immunosorbent assay (ELISA).

Our results demonstrate that the serum level of IFN-γ was comparable between the patients and healthy individuals ($p<0.01$). A low level of this cytokine - <50pg/ml did not change by ablation or after liver resection. The serum levels of IL-17, IL-10 and TGF-β were significantly elevated in patients with advanced liver cancer compared to healthy individuals. A month after RFA the serum levels of IL-17, IL-10 and TGF-β were decreased to the level of health individuals. Tumor resection resulted in insignificant decrease of serum levels of IL-10 and TGF-β and significant elevation of IL-17 after a month of the surgery.

Short-term immune modulatory effect of RFA is observed in patients with advanced liver cancer.