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## The role of combined local tumor ablation and cytokine-based gene therapy

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Liver cancer is the second leading cancer in Taiwan now. The hallmarks of liver cancers are that it is always identified clinically at an advanced stage. Although a wide range of therapeutic options is available, the only two radical intervention for liver cancer are liver resection and locoregional thermal ablation (LTA) such as radiofrequency ablation (RFA) or irreversible electroporation (IRE). However, the application of LTA is limited by tumor size, location and advanced disease-status. We hypothesize the combined immunotherapy will provide patients received LTA an opportunity to get larger ablation zone, systemic disease control and obtain longer survival. In this study we evaluated the effect of RFA and IRE on the immune response in animals bearing hepatoma with luciferase expression able to be observed in IVIS system. We found out the immune response after RFA is higher than IRE, and immunotherapy with GM-CSF naked DNA delivery after LTA could decrease the entity and the function of peripheral Tregs and decreased the tumor size.