ELECTROCHEMOTHERAPY OF DEEP SEATED TUMORS

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ECT is a local treatment that combines application of electric pulses to increase the uptake of cytotoxic drugs, such as bleomycin and cisplatin, into tumor cells. ECT has already been implemented as palliative treatment of skin melanoma metastases, but is also effective in treatment of other cutaneous and subcutaneous nodules regardless of their histological origin. The objective response rate of the ECT treated nodules is 80% and long lasting complete response rate is 70%. ECT was succesfully translated into treatment of bigger (≥ 3 cm in diameter) and deep-seated tumors with the technological adaptation of the procedure and verification of its safety and effectiveness.

Our first study on a case of patient with solitary colorectal cancer metastasis in the liver showed the feasibility of the method. Based on that data, first pilot clinical study for the treatment of colorectal liver metastases in order to evaluate the feasibility, safety and efficacy of electrochemotherapy was conducted. Treatment with electrochemotherapy was effective, a high response rate of complete response was observed. High response rate was observed in all groups regardless of anatomical locations of the liver, also on metastases in the vicinity of major hepatic vessels

Treatment of colorectal liver metastases with electrochemotherapy is feasible, as long as the electrodes are precisely placed into and around the metastases. Treatment plan should be prepared for each patient separately to fulfill this requirement. Furthermore, electrochemotherapy is also appropriate for the treatment of unresectable metastases, such as those located near major vessels or nerve bundles. Efficacy of radiofrequency ablation, for example, which is also one of the methods for treatment of inoperable metastases, is in the vicinity of big vessels lower due to heat sink effect.

Electrochemotherapy of hepatocellular carcinoma proved to be a feasible, safe and effective treatment in patients who were not amenable to other therapeutic ablative techniques. Electrochemotherapy is predominantly applicable in patients with impaired liver function due to liver cirrhosis and/or with lesions where a high-risk operation is needed to achieve curative treatment, given the intra/perioperative risk for high morbidity and mortality

Finally, benefits of electrochemotherapy are not only due to the treatment alone, but survival time could be prolonged also due to possibility of additional treatments. Our ongoing study will gain new knowledge in a field of electrochemotherapy treatment of colorectal metastases.

Electrochemotherapy is safe and effective intraoperative treatment approach for liver metastases, as well as primary liver tumors, which are found to be in difficult-to-treat locations or are untreatable with other standard ablation techniques. Electrochemotherapy has being translated also into treatment of other deep seated tumors. Based on the principle of treatment of liver tumors some studies performed on pancreatic tumors as well as bone metastases. Endoscopic devices suitable for treatment of colorectal tumors were developed as well and clinical study is ongoing.