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Nanoknife Irreversible Electroporation (IRE) for pancreatic and liver tumors

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Nanoknife irreversible electroporation is a locally based treatment for unresectable cancers, particularly those close to major vascular structures. Using DC electrical current, small pores are created in the cellular membrane allowing extracellular fluid to enter and rupture the cell. This is accomplished without damage to the underlying vessels and ducts in the vicinity. In contradistinction to heat based ablative therapies such as radiofrequency and microwave ablation, there is no heat-sink effect which increases the rate of recurrence near major vascular structure. This procedure has been primarily used for locally advanced tumors of the pancreas involving the superior mesenteric artery and/or vein or the celiac artery and tumors of the liver near the major hepatic veins, inferior vena cava or portal veins. It has also been successfully used in tumors of the head and neck, lung, retroperitoneum, kidney and prostate. Martin et al. documented a doubling in survival in patients with locally unresectable pancreatic cancers from under 12 months (historical controls) to 24.9 months. This procedure can be done both as an open surgical procedure and percutaneously by interventional radiology. Nanoknife therapy provides a safe alternative therapy for patients with previously unresectable disease in the liver and pancreas. With a short follow up, we have demonstrated effective local control. Longer follow up and larger series are needed. Aurora Health Care system has become the first site in Wisconsin to offer this new technology. The procedural details, indications, patient selection and precautions will be presented along with case studies of patients undergoing this procedure.

Biography

Aaron H Chevinsky is the Director of Surgical Oncology at Aurora Health Care in Wisconsin, USA. He has lectured nationally and internationally and has published on many aspects of cancer care. He has attended medical school, completed his Surgical Residency in New York and completed a Surgical Oncology Fellowship at Ohio State, USA. He has been named to the Top Docs list and has won awards for the development of multidisciplinary cancer care programs.

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