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Managing probable post electrochemotherapy(ECT) tumor lysis syndrom (TLS) and acidosis in patients with large size cancer tumors

O. Nabavian

University of Tehran, Iran

ECT is a recently introduced method entered in to clinical guidelines for inoperable superficial cancer tumors . The mechanism of action is nano pore formation in cell mebrane due to applied pulse electric field (in the range between 400-1000 V/Cm and frequency of about 5KHz) with time duration of 0.1mSec. Although the results of the treated cases by ECT (e.g. melanoma, BCC, SCC , superficial Sarcoma and subcutaneous metastasis of breast Carcinoma) showed impressive curative and palliative responses , some concerns must be considered before wide entrance of this method in the clinics. One of these alarms is managing the post ECT necrosed large tumors to prevent from tumor lysis syndrome (TLS) and acidosis. In treating large tumors ($> 5 \times 5 \times 5$ cm³ in total dimension) by ECT, fast necrosis of treated masses would be occurred because of effective response of the tumor and vascular cells (in tumor ambient) to bleomycin entered by electroporation. TLS and blood acidosis can happen from 1 up to 10 days after the therapy. Here we investigated 6 ECT cases with large carcinoma and sarcoma tumors and administered serum therapy (Hydration by N.Saline 1 litt. PD for 4 days); and Allopurinol 100mg (1#PD for 10 days) while recording their vein blood gas (VBG) in the periods of 2 to 10 days after ECT near checking kidney and liver functions (serological tests). Results showed no induced acidosis or any related adverse effects (such as raised Uric Acid) while observable dry necrosis and wide crust were formed all over the tumor. In our point of view, time and type of the assays for checking TLS and acidosis, drugs or serums administration to manage probable TLS and acidosis must be deeply investigated as one of the important functions to clinically extend the application of ECT. Moreover, the results must be reported in epidemiological manner. A suitable guideline may be a solution to treat large-size tumors with ECT while preventing acidosis. This program is under progress in our group.

Biography

Dr. O. Nabavian is a researcher affiliated with the Nano Bioelectronics Devices Lab within the Cancer Electronics Research Group at the University of Tehran's School of Electrical and Computer Engineering. With a focus on the intersection of bio-engineering and oncology, Dr. Nabavian's work specializes in managing complex cases of tumor lysis syndrome (TLS) and acidosis following electrochemotherapy (ECT) in patients with large cancerous tumors. In collaboration with the Cancer Institute at Imam Khomeini Hospital, Tehran University of Medical Sciences, Dr. Nabavian is deeply involved in advancing techniques to mitigate ECT-related complications and improve patient outcomes. Through innovative approaches, Dr. Nabavian contributes to a multidisciplinary understanding of TLS, aiding in the development of more effective cancer therapies that address the unique metabolic challenges faced by oncology patients.