Plasma filtration (PF) effectively removes circulating pegylated liposomal doxorubicin (pld) and modifies chemotherapy-related toxicity in metastatic ovarian cancer

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Statement of the Problem: Pegylated liposomal doxorubicin (PLD), a formulation of doxorubicin hydrochloride encapsulated in polyethyleneglycol-coated liposomes, has proved its efficacy in the treatment of ovarian cancer and other solid tumors. The major dose-limiting toxicities include hand-foot syndrome (HFS) and mucositis. Thanks to the unique pharmacokinetic properties of PLD and the defective vasculature of the tumor tissue, the peak PLD concentration in the tumor is attained considerably faster than in other tissues in which toxic reactions occur. Interestingly, less than 5% of the administered dose is delivered to the target tissue; hence, it is believed that the majority of the administered PLD has a limited therapeutic value and is merely responsible for organ toxicity. Therefore, the extracorporeal removal of circulating PLD could be a promising method to increase PLD tolerability while preserving its antitumor activity. This study seeks to evaluate the safety and efficacy of PF and the related changes in chemotherapy-related toxicity.

Methodology & Theoretical Orientation: Patients with platinum-resistant ovarian cancer were treated with PLD 50 mg/m2 in one-hour IV infusion q4w, followed by plasma filtration (PF) performed at hours 44(46)-47(49) post dose. Plasma PLD concentration was measured to assess the pharmacokinetic parameters and PF efficacy. Treatment-related toxicity and the patients' outcome were also evaluated.

Findings: Fifteen patients were enrolled in this study and received a median of 3 (2-6) chemotherapy cycles. In all, 53 PF cycles were evaluated. PF eliminated a median of 30.1% (12.7-64.6%) of the administered PLD dose. Only one case of grade 3 HFS and grade 1 mucositis were documented.

Conclusion & Significance: Plasma filtration represents a potent method in the removal of circulating PLD. It is well tolerated and it seemingly reduces the incidence of hand-foot syndrome and mucositis.

Biography

Ondřej Kubeček is a graduate of Charles University, Faculty of Medicine in Hradec Králové, Czech Republic. He has been practicing since 2012 as the medical oncologist at the Department of Oncology and Radiotherapy at the Hradec Králové University Hospital. He focuses on the treatment of GI cancers, malignant melanoma, and ovarian cancer. In 2016, Kubeček worked as a research scholar at the Department of Experimental Medicine and Pathology at Mayo Clinic, Rochester, USA. As a PhD student, he is currently working on a research project dedicated to the use of extracorporeal elimination of pegylated liposomal doxorubicin to improve the treatment tolerability in patients with ovarian cancer

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