**Title of the project:** Liposoms (drug delivery systems) in kinetically guided therapy of ovaria platinum-resistant carcinoma with doxorubicin using plasmafiltration.

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**Summary of 2019 results**

**Title of the presentation:** Plasmafiltration as an effective method in the removal of circulating pegylated liposomal doxorubicin (PLD) and the reduction of mucocutaneous toxicity during the treatment of ovariad cancer.

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**Abstract.** Purpose. The present study evaluates the safety and efficacy of double-plasma filtration (PF) to remove the exceeding pegylated liposomal doxorubicin (PLD) in circulation, thus reducing mucocutaneous toxicity.

**Methods.** A total of 16 patients with platinum-resistant ovarian cancer were treated with 50 mg/m² PLD applied in 1-h IV infusion every 28 days. PF was scheduled at 44–46 h post-infusion. The concentration of plasma PLD and non-liposomal doxorubicin (NLD) was monitored with high-performance liquid chromatography over 116 h post-infusion. A non-linear method for mixed-effects was used in the population pharmacokinetic model. The dose fraction of PLD eliminated by the patient prior to PF was compared with the fraction removed by PF. PLD-related toxicity was recorded according to CTCAE v4.0 criteria and compared to historical data. Anticancer effects were evaluated according to RECIST 1.1 criteria.

**Results.** The patients received a median of 3 (2–6) chemotherapy cycles. A total of 53 cycles with PF were evaluated, which removed 31% (10) of the dose; on the other hand, the fraction eliminated prior to PF was of 34% (7). Exposure to NLD reached only 10% of exposure to the parent PLD. PLD-related toxicity was low, finding only one case of grade 3 hand–foot syndrome (6.7%) and grade 1 mucositis (6.7%). Other adverse effects were also mild (grade 1–2). PF-related adverse effects were low (7%). Median progression-free survival (PFS) and overall survival (OS) was of 3.6 (1.5–8.1) and 7.5 (1.7–26.7) months, respectively. Furthermore, 33% of the patients achieved stable disease (SD), whereas that 67% progressed.

**Conclusion** PF can be considered as safe and effective for the extracorporeal removal of PLD, resulting in a lower incidence of mucocutaneous toxicity.

**Keywords** Cancer therapy; Ovarian cancer; EPR effect; Population kinetics; Pegylated liposomal doxorubicin (PLD); Mucocutaneous toxicity; Hand–foot syndrome; Plasmapheresis.

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