Adoptive cell therapy with tumor-infiltrating lymphocytes for patients with metastatic ovarian cancer: A pilot study

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Background: Metastatic ovarian cancer (OC) is often diagnosed at an advanced stage and treated with standard platinum-based chemotherapy after which the majority of patients will experience recurrent/progressive disease with a poor prognosis. Adoptive cell therapy (ACT) with tumor-infiltrating lymphocytes (TIL) has shown impressive results in malignant melanoma, but has only been investigated scarcely in other cancers. This pilot study has tested TIL based ACT in patients with metastatic OC. Preliminary data has previously been presented at the European Society of Medical Oncology (ESMO), the Society of Immunotherapy of Cancer (SITC) and the Cancer Immunotherapy & Immunomonitoring (CITIM) conferences. In this abstract the final results of the study is presented.

Methods: Patients with platinum-resistant metastatic OC were treated with an infusion of TIL preceded by standard lymphodepleting chemotherapy (Cyclophosphamide 60 mg/kg for 2 days and Fludarabine 25 mg/m² for 5 days) and followed by stimulation with a continuous IL-2 infusion in accordance with the decrescendo regimen for up to 5 days. Stem cell harvest was performed before TIL therapy. Primarily, the feasibility and tolerability of the treatment was assessed. Secondly, potential immune responses against tumor cells were monitored and objective response of the treatment was described.

Results: Only expected and manageable toxicities related to the treatment were observed. All patients had stable disease (SD) for a minimum of 3 months with 4 patients experiencing progressive disease (PD) at this time point. The last two patients had SD for 5 months. Modest antitumor reactivity was observed in expanded TIL, but not in peripheral blood lymphocytes (PBL) collected after treatment.

Conclusions: ACT with TIL in combination with decrescendo IL-2 is feasible and tolerable in patients with metastatic OC with only expected and manageable toxicities. Methods of altered TIL expansion or combining TIL therapy with checkpoint inhibitors in future studies could possibly enhance the mainly transient clinical responses observed in this pilot study.