Title: Observed treatment adjustments and complications in an ovarian cancer patient with inborn error of immunity

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INTRODUCTION: Inborn errors of immunity (IEI) prone patients to increased risk of developing cancer. However, there is sparse literature on optimizing their cancer treatment.

OBJECTIVES: We present a patient with specific antibody deficiency (SAD), immune dysregulation (AI) and stage III high grade ovarian carcinoma, whose treatment regimen needed modification secondary to ongoing infections.

METHODS: This is a retrospective chart review on the patient's cancer treatment course.

RESULTS: Our patient with SAD and AI (ANA+, polyarthralgia, autoimmune neutropenia) was diagnosed with stage III ovarian carcinoma at age 60. After robot-assisted laparoscopic primary debulking surgery she underwent 6 cycles of chemotherapy. Prior to cycle 1, routine immunoglobulin replacement therapy was adjusted from 40 mg of IVIG every two weeks to 80 mg of IVIG every 3 weeks (1.3 g/kg/3 weeks, wt 60 kg), administered 1 week prior to each chemo cycle. Chemo doses were lowered for all cycles: Carboplatin (area under the curve (AUC) 4 instead of standard 5), Paclitaxel (Taxol 150 mg/m^2 instead of standard 175 mg/m^2) and Avastin (15 mg/kg). Colony-stimulating factor pegfilgrastim throughout prevented febrile neutropenia. After cycle 1, the patient developed pulmonary mycobacterium avium-intracellulare (MAI) infection, hyperbilirubinemia, elevated liver enzymes, and urinary retention. Liver evaluation was reassuring. For post-cycle-1 adjustment, the IVIG dose was reduced to 60 mg (1g/kg/4 weeks, wt 50 kg). During cycle 2 and 3, the patient developed urinary tract infection (UTI) caused by *Klebsiella pneumoniae*, treated with Rocephin and Ciprofloxacin. Throughout cycles 4-6, UTI was prevented with prophylactic Bactrim and Azithromycin and received Myrbetriq for symptoms of urinary incontinence. The patient completed all 6 cycles. For MAI lung scarring and recurrent cough, she had repeat bronchoscopy that was unrevealing. Post-chemo CT scan revealed no evidence of cancer, therefore she will continue with 1-year maintenance therapy of Avastin (15 mg/kg). Cancer genetic analysis revealed no targetable markers, primary immunodeficiency gene panel (207 genes) was unrevealing.
CONCLUSIONS: Patients with IEI with cancer may require a modified treatment course and multidisciplinary team approach. Larger studies are needed on how to adjust therapy to decrease risk of infection but still treat cancer aggressively for optimal long-term outcomes.

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