Gemcitabine Induced Radiation Recall
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Abstract
Radiation recall is a severe skin reaction that develops when chemotherapy is administered during or soon after radiation treatment. It usually appears on the area of skin where the radiation was administered several weeks to months after the first radiation exposure. We present a case of a 62 year old male who was diagnosed and treated for pancreatic adenocarcinoma with Gemcitabine and radiation. He presented 3 months after the first radiation with right sided chest pain which was diagnosed as Radiation Recall.

Case Report
A 62-year-old gentleman presented to the Emergency Department with complaints of right-sided chest and arm pain. Chest xray showed a lung nodule and subsequent Computed Tomography (CT) showed a mass at the head of the pancreas, multiple liver nodules and signs of destructive lesions of the ribs (Fig 1.) CT guided biopsy of the liver confirmed a poorly differentiated pancreatic adenocarcinoma clinically staged T2 N1 M1. The biopsy was also found to be TTF-1 negative (Fig-2.) He received the standard of care with Gemcitabine 1000 mg per week for three weeks on and one week off. The right chest pain persisted despite initiating narcotics and palliative radiation therapy began. The radiation allowed marked improvement in his pain, and then gemcitabine was resumed. Three months after radiation therapy was initiated, the patient presented again with severe right-sided chest pain, and inability to abduct the right arm. On physical exam he was found to have swelling and hyperemia on the right chest wall (Fig-3.) The patient was admitted for presumed diagnosis of cellulitis and was empirically treated with Kefzol. CT scan showed no abscess or tumor invasion at the site. At this point it was determined that Gemcitabine radiation recall was the likely diagnosis and thus was treated with Prednisone. Patient showed significant clinical improvement with 2 weeks of steroid treatment. Once the radiation recall resolved, the 6th cycle of Gemcitabine was administered and prednisone was slowly tapered. Patient never demonstrated radiation recall again. He successfully completed his 8 cycles of Gemcitabine and now continues to show clinical and radiological improvement in his disease.

Introduction
Radiation recall occurs as a combined effect of an initial exposure to radiation and a subsequent exposure to a drug. The mechanism has not been determined but the outcome is caused by inflammation of internal and external organs. The pathophysiology of this phenomenon remains poorly understood but inflammation of both the internal and external organs secondary to radiation in combination with the chemotherapy drugs is the most probable explanation.

Discussion
Radiation recall is a severe skin reaction that develops when chemotherapy is administered during or soon after radiation treatment. It usually appears on the area of skin where the radiation was administered several weeks to months after the first radiation exposure. The current incidence of radiation recall is unclear as it may be missed. There are 13 known cases of Gemcitabine radiation recall of which 70% showed effects to internal organs, while only 30% presented with superficial tissue inflammation as in this case. These individuals are often immunocompromised and the fear of infection may deter one from including radiation recall in the differential. Not only will it save time for the patient, but recognition of this phenomenon will save valuable resources and energy for the healthcare team. Clinical recognition of this phenomenon is essential to avoid unnecessary testing and treatments.

References: