PRECISION RADIOTHERAPY
A partnership of Mayfield Clinic and University Radiology Associates

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Recurrent Pancreatic Cancer: Dose Intensification for Local Control

by > David Grisell, DO

Clinical problem

After presenting in March 2002 with painless jaundice, this 71-year-old man underwent a Whipple procedure for a moderately differentiated adenocarcinoma of the pancreatic head. Standard adjuvant external radiation therapy (XRT) was administered to the pancreatic bed and regional nodes (to 50.4 Gy) with concurrent 5FU chemotherapy. The patient did well until February 2004 when rising levels of CA 19-9 serum tumor marker were detected. PET/CT restaging revealed a recurrent 2-3 cm mass that engulfed the porta hepatis and celiac axis, but no distant disease. Four cycles of Gemzar were administered. Although repeat CA 19-9 levels were further elevated, the mass appeared stable on repeat CT in May 2004. The patient sought a second opinion regarding salvage therapy for locally recurrent pancreatic cancer and a Karnofsky performance status of 80%.

Treatment options

Surgical resection of previously treated locally recurrent pancreatic cancer is essentially impossible. Extensive adhesion and fibrosis from previous surgical and radiation treatment prevents both adequate dissection and hemostasis. Additionally, re-irradiation and the additive dose of previous irradiation poses a risk to the patient of major injury to the surrounding bowel, nearby kidneys, and liver. Therefore, chemotherapy alone is the standard salvage regimen. However, we now have the capabilities not only to paint precise and accurate radiation doses within 3D volumes but to mostly spare immediate adjacent normal structures. The advent of stereotactic localization techniques helps in the precise localization of a specific target to undergo daily radiation therapy. When combined with intensity-modulated radiation therapy (IMRT), this regimen helps to avoid critical structures (kidneys, bowel, liver). Hyperfractionated radiation therapy (multiple small doses per day) can potentially further decrease the risk of major late toxicity (>6 months). With this technologically intensive strategy, re-irradiation is a feasible option.

Comments

Although this patient most likely has incurable disease, several factors lend to further attempts at local control and long-term palliation if done relatively safely. These factors include the following:

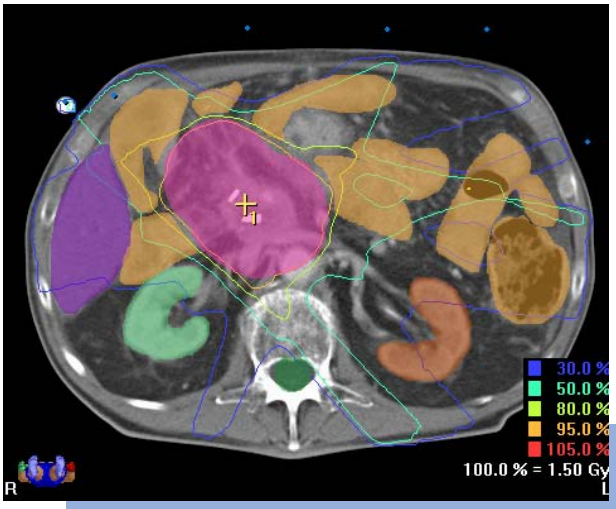


Figure 1. A stereotactic radiotherapy treatment plan was developed to treat the tumor + 1.5 cm margin (pink). Beam directions were selected to avoid the spinal cord (previously treated to tolerance) and minimize dose to the liver, kidneys and bowel.

slow disease progression, relative long survival, and local-only recurrence. There is published data to support re-irradiation in the head, neck, and pelvis, however, the retroperitoneum is just now being approached. Ultimately, the patient opted to pursue hyperfractionated re-irradiation with sensitizing chemotherapy.

References

1. Machtay M, et al. Pilot study of postoperative reirradiation, chemotherapy, and amifostine after surgical salvage for recurrent head-and-neck cancer. **Int J Radiat Oncol Biol Phys** 59: 72-7, 2004.
2. Mohiuddin M, et al. Long-term results of reirradiation for patients with recurrent rectal carcinoma. **Cancer** 95:1144-50, 2002.

How to refer

Because of the specific nature and complexity of the services we provide, patients must have a consultation with one of our physicians prior to being referred to the center. To schedule an appointment with one of our physicians, please contact Precision Radiotherapy at 513-475-7777. Additional information is available on the web at **www.precisionradiotherapy.com**.

The Precision Radiotherapy Center

The Precision Radiotherapy Center provides an option for patients with tumors or other neurological disorders. Developed by the Mayfield Clinic and University Radiology Associates, two nationally recognized neuroscience programs affiliated with the University of Cincinnati College of Medicine, Precision Radiotherapy is the region's first center to offer high-precision radiotherapy/ radiosurgery for tumors and other abnormalities both inside and outside the brain. We can target benign and malignant tumors of the brain, head and neck, as well as tumors elsewhere in the body, such as the prostate, spine, liver and lung. Patients also come to us for treatment of vascular malformations, trigeminal neuralgia, acoustic neuromas and pituitary adenomas.

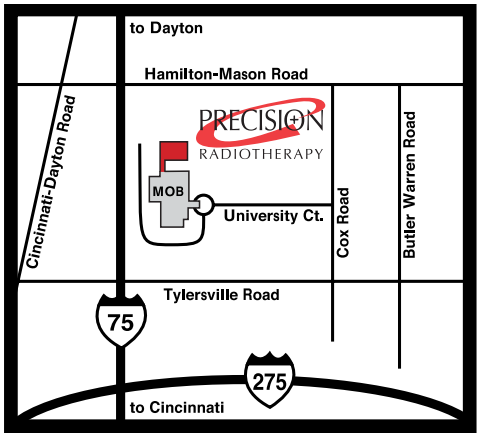
Hours of Operation

Monday-Friday, 8:00 a.m. - 5:00 p.m.

Directions

The Precision Radiotherapy Center is conveniently located on I-75, just north of Cincinnati at University Pointe, 7710 University Court, in West Chester, Ohio. For detailed directions, visit our website:

www.precisionradiotherapy.com



The Precision Radiotherapy Team

Precision Radiotherapy is one of the most progressive treatment centers in the Midwest, featuring a team of internationally recognized specialists and highly skilled staff:

Radiation Oncology
Radiation oncologists of University Radiology Associates are board-certified physicians with specialized training in treating tumors and other lesions with various forms of radiation.

William Barrett, MD
John Breneman, MD
David Grisell, DO
Kevin Redmond, MD

Neurosurgery
Neurosurgeons of the Mayfield Clinic provide initial patient evaluation, treatment planning and follow-up for all neurosurgical patients treated.

George Mandybur, MD
William Tobler, MD
John M. Tew, Jr., MD
Ronald Warnick, MD

Radiology
Radiologists from University Radiology Associates work with the team to precisely identify the target area for radiation treatment.

Robert Lukin, MD
Mary Gaskill-Shipley, MD
Gavin Udstuen, MD

Radiation Therapy
Radiation therapists of Precision Radiotherapy are state-licensed, highly trained health professionals who deliver radiation treatment according to specific protocols. They are registered by the American Registry of Radiologic Technologists (ARRT).

Medical Physics
Medical physicists of Precision Radiotherapy are health professionals with special training in radiation physics, are responsible for maintaining and calibrating the equipment used to deliver radiation.