

RE: Upper gastrointestinal complications associated with gemcitabine-concurrent proton radiotherapy for inoperable pancreatic cancer. *J Gastroenterol.* 2013; (E-pub only).

R. Charles Nichols, Jr, Bradford S. Hoppe

University of Florida Proton Therapy Institute, Jacksonville, FL 32206, USA

Corresponding to: R. Charles Nichols, Jr, M.D. University of Florida Proton Therapy Institute, 2015 North Jefferson Street, Jacksonville, FL 32206, USA. Email: rnichols@floridaproton.org.



Submitted Sep 02, 2013. Accepted for publication Sep 08, 2013.

doi: 10.3978/j.issn.2078-6891.2013.048

Scan to your mobile device or view this article at: <http://www.thejgo.org/article/view/1556/2284>

To the editor,

Dr. Takatori and colleagues deserve praise for meticulously studying the extent and severity of upper gastrointestinal (GI) complications in 91 inoperable pancreatic cancer patients treated on a prospective clinical trial with proton-based radiotherapy and concomitant gemcitabine chemotherapy (GPT) (1). The significant complications observed in this series (49.4% rate of gastric/duodenal ulceration), however, starkly contrast the favorable toxicity profile we observed in our series of pancreatic cancer patients treated with proton therapy and concomitant capecitabine chemotherapy (2). In our series, we observed no grade 3 toxicities in patients receiving proton doses ranging from 50.40 to 59.40 Cobalt Gray Equivalent (CGE) at 1.8 CGE per daily fraction with daily oral capecitabine (1,000 mg twice daily). The median weight loss during treatment was only 1.3 kg (1.75% of body weight). Additionally, when radiotherapy plans avoided the use of anterior or left lateral fields—reducing small bowel and gastric exposure—grade 2 GI toxicity was eliminated and median weight loss was only 0.5 kg.

Possible explanations for the disparity of outcomes between these two series might include: (I) aggressive radiotherapy doses [67.5 Gray equivalent (GyE)] and high dose per fraction (2.7 GyE) delivered in the GPT series; (II) concomitant delivery of full-dose gemcitabine (800 mg/m² on days 1, 8, and 15), well-recognized as a potent radiosensitizing agent; and (III) radiotherapy fields expanded to include regional lymph nodes in addition to the primary tumor. Although details of the radiotherapy plans were not included in the GPT publication, it is possible that some of the toxicity might have been mitigated if anterior

and left lateral fields had been avoided or the dose delivered through such fields was minimized.

While the current study is well-designed and well-reported, it would be wrong to conclude that proton therapy for patients with pancreatic cancer is associated with a high rate of gastrointestinal toxicity. Indeed, we have every reason to believe, based on its superior dosimetry (3), that proton therapy offers significant improvements in the therapeutic index compared to X-ray-based therapies such as intensity-modulated radiotherapy. Our clinical experience helps confirm the hypothesis, based on this dosimetry, that proton therapy reduces GI toxicity and may allow for treatment intensification—although perhaps not to the same degree as the intensification offered on the GPT protocol.

We appreciate you taking the time to consider our letter and look forward to hearing from you in the future.

Acknowledgements

Disclosure: The authors declare no conflict of interest.

References

1. Takatori K, Terashima K, Yoshida R, et al. Upper gastrointestinal complications associated with gemcitabine-concurrent proton radiotherapy for inoperable pancreatic cancer. *J Gastroenterol* 2013. [Epub ahead of print].
2. Nichols RC Jr, George TJ, Zaiden RA Jr, et al. Proton therapy with concomitant capecitabine for pancreatic and ampullary cancers is associated with a low incidence of gastrointestinal toxicity. *Acta Oncol* 2013;52:498-505.

3. Nichols RC Jr, Huh SN, Prado KL, et al. Protons offer reduced normal-tissue exposure for patients receiving postoperative radiotherapy for resected pancreatic head cancer. *Int J Radiat Oncol Biol Phys* 2012;83:158-63.

Cite this article as: Nichols RC Jr, Hoppe BS. RE: Upper gastrointestinal complications associated with gemcitabine-concurrent proton radiotherapy for inoperable pancreatic cancer. *J Gastroenterol*. 2013; (E-pub only). *J Gastrointest Oncol* 2013;4(4):E33-E34. doi: 10.3978/j.issn.2078-6891.2013.048