

## Immediate results of radiotherapy of loco-regional recurrent rectal cancer

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### Abstract

The goal of our study was to increase effectiveness of radiotherapy (RT) of Loco-regional recurrent rectal cancer (LRRRC) by establishing most appropriate median and dynamic dose fractioning regimes for independent RT of LRRRC, immediate results of treatments, frequency and severity of early radiation reactions of RT.

40 patients with a diagnosis of LRRRC were included into our study with median age of 72 years. On average time of recurrence development was 19 month. RT was performed in median and dynamic dose fractioning regimes. For patients in first arm (20 patients) palliative RT was used with a fractioning dose of 3 Gy with SD 42 Gy (SDeq 51 Gy). Second arm patients received dynamic dose fractioning RT – 4, 3, 2 Gy until SDeq of 51 Gy was reached.

In first arm complete response was achieved in 1 patient, partial response in 15, process stabilization in 3 cases and 1 patient suffered from disease progression. In second arm complete response was indicated in 3 cases, partial response in 17. As a result of follow-up observation 5 patients from this group were later operated on.

Among early radiation reactions for the first arm I stage nausea was indicated in 3 patients, I–II stage rectitis in 15 cases, I stage epitheliitis – in 4 cases. For the second arm I stage nausea – 7, I–II stage rectitis – 7, I stage epitheliitis – 6, while 6 patients did not suffer from early radiation reactions altogether.

Thus, it was proven that use of dynamic dose fractioning allowed reaching full SD with reduction in complication frequency without loss of quality of treatment.

**Key words:** Recurrent Rectal Cancer, Radiation Therapy, Dynamic Fractionation.

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### References

1. *Davydov M. I., Axel E. M.* Malignant tumor statistics of Russian Federation and CIS in 2009. ROC Blokhina RAMN magazine. 2011. V. 17. N. 3 (App. 1). P. 15–20 (in Russian).
2. *Kaprin A. D., Starinskij V. V., Petrova G. V.* Malignant neoplasias in Russian Federation in 2012 (morbidity and mortality). Moscow, 2014. P. 9, 10 (in Russian).
3. *Chih H. H., Hwa C. H., Lo C. C. et. al.* Postoperative Low Pelvic Radiotherapy and Chemotherapy for Stage II and III Rectal Cancer. *Am. J. Clin. Oncol.* 2012. V. 35. P. 68–72.
4. *Ferrigno R., Santos A., Martins L. C. et. al.* Comparison of conformal and intensity modulated radiation therapy techniques for treatment of pelvic tumors. Analysis of acute toxicity. *Radiat. Oncol.* 2010. V. 5. P. 117.
5. *Marsh R. W., George T. J., Siddiqui T. et al.* A Phase II Trial of Neoadjuvant Capecitabine Combined With Hyperfractionated Accelerated Radiation Therapy in Locally Advanced Rectal Cancer. *American Journal of Clinical Oncology.* 2010. V. 33 (3). P. 251–256.

6. *Menkarios C., Azria D., Laliberté B. et al.* Optimal organ-sparing intensity-modulated radiation therapy (IMRT) regimen for the treatment of locally advanced anal canal carcinoma: a comparison of conventional and IMRT plans. *Radiat. Oncol.* 2007. V. 15. P. 41–49.
  7. *Meyer J. E., Narang T., Schnoll-Sussman F. H. et. al.* Increasing incidence of rectal cancer in patients aged younger than 40 years: an analysis of the surveillance, epidemiology, and end results database. *Cancer.* 2010. V. 116 (18). P. 4354–4359.
  8. *Sebag-Montefiore D., Stephens R. J., Steele R. et. al.* Preoperative radiotherapy versus selective postoperative chemoradiotherapy in patients with rectal cancer (MRC CR07 and NCIC-CTG C016): a multicentre, randomised trial. *The Lancet.* 2009. V. 373. P. 811–820.
  9. *Peng J. Y., Li Z. N. and Wang Y.* Risk factors for local recurrence following neoadjuvant chemoradiotherapy for rectal cancers. *World J. Gastroenterol.* 2013. V. 19 (32). P. 5227–5237.
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