

IN VIVO MEASUREMENTS DURING RADIATION TREATMENT OF HEAD AND NECK CANCER PATIENTS

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Purpose

The evaluation of quality of head and neck patient irradiation by analysis of entrance and exit doses measurements, calculation of midline doses, dosimetric errors calculation and analysis, and defining their sources.

Material and Methods

The study included 262 patients (300 fields). 1015 entrance and 863 exit doses were measured. 863 midline doses were calculated. 50 measurements were performed using TLD and the remaining by semiconductor diodes.

Results

The mean dosimetric errors of midline, entrance and exit doses were respectively 0.42%, -1.04% and -0.27%. Numerous sources of errors were found and some of them were corrected during the treatment. There were the following

most important factors influencing the value of dosimetric error: kind of wedge filters and fixing masks, SSD, tumour and detector localization, irradiation technique, time of radiotherapy and discrepancies between real and measured thickness of irradiated volume.

Conclusion

The value of dosimetric error is not constant and it may change during long time of fractionated radiation treatment. Some anatomical (tumour localisation, density of surrounding tissues) and technical (irradiation technique, immobilization masks, wedge filters and the discrepancy between planned and real SSD) parameters of irradiation have to be precisely defined and checked out during the treatment because they can be the main sources of dosimetric errors.

RADIATION ENTEROPATHY: PREVENTION AND TREATMENT

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Surgical considerations in the management of radiation-induced injury of the gastrointestinal tract include the prevention of future radiation injury and treatment of the complications of established chronic radiation enteropathy.

At the time of operation for abdominal or pelvic malignancy, the surgeon must be aware of the indications for and techniques of postoperative radiation therapy. Careful preoperative staging and close cooperation between the surgeon and the radiation therapist should allow for the planning of measured designs to position the small bowel intraoperatively such that it will receive the minimal possible radiation exposure during the course of postoperative radiotherapy.

Surgical management of chronic radiation enteropathy is concerned with treatment of the complications of obstruction, fistulization,

infection and bleeding. The distal small intestine and the rectum are the areas involve most frequently. Partial obstructive symptoms are best treated nonoperatively until complete obstruction ensues on until the symptoms are incapacitating. These operations can be extremely difficult. Principles of operative management include resection (whenever feasible and safe) with primary anastomosis between healthy, nonirradiated segments of bowel. Radiation proctitis is also best managed conservatively with laser therapy of rectal bleeding and supportive care of symptomatic tenesmus. When symptoms are sufficiently severe to warrant surgical intervention, proctectomy with a permanent end-sigmoid colostomy is the treatment of choice.

Fistula formation and pelvic sepsis are the most challenging complications associated with radiation enteropathy and may require staged procedures for management.