Radiotherapy of the larynx malignant tumors

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Therapeutic approach to the carcinoma of the larynx depends on a number of factors, particularly of the tumor localization and the disease stage. Methods that preserve larynx functions have priority, and they also contribute to disease control. Estimation of the local and the regional tumor involvement is important before therapy planning. Optimal findings, contributing better staging, are laryngomicroscopy (LMS), CT, MRI, and neck ultrasound examination. CT is of great value in the assessment of tumor spreading. In that way, spreading of the tumor through the front commissure can be noticed, as well as breakthrough of the thyroid cartilage and infiltration of the prelaryngeal muscle and also infiltration of the thyroid gland. This is important for therapy choosing and planning. Role of radiotherapy in the larynx cancer treatment is important, since it is mainly locoregional disease. Radiotherapy and surgery of glottis tumors T1 and T2 are of equal efficacy. In both cases 5-year survival is 80%-95%. In T1 and T2 tumors of the supraglottic regions, the applied treatment is, in the first place, surgical- partial laryngectomy, and postoperative irradiation therapy is conducted in some cases (the most frequently in positive, bordering PH preparations and the neck involved lymph nodes). T3 and T4 Tumors with N0 up to N2 have to be treated with total laryngectomy, and then with postoperative irradiation therapy. Subglottis tumors are treated with radiotherapy, and depending on response, with surgery after preoperatively applied radiotherapy. Inoperable tumors are treated with radiotherapy or chemotherapy in combination with radiotherapy, what has been the subject of many clinical trials, with the aim of improving survival and quality of life. With LMS finding, it is necessary to have CT (or MR examination), that can give us additional data on the tumor local spreading and contribute to more precise planning of the irradiation volume. In the glottis tumors T1 and T2, dissemination in the regional lymph nodes is not expected, so irradiation therapy is applied with local technique. Irradiation volume includes complete larynx (smaller irradiation volume may have negative effect due to possible local tumor spreading to the region of the front commissure and further front spreading).

In the supraglottis tumors T and T2, without involvement of the lymph nodes (NO), primary tumor is included in the irradiation volume with potential local and regional spreading (since they show tendency of spreading into oropharynx, and regionally into upper cervical group lymph nodes). Medulla spinalis, as an organ of risk, is included into irradiation volume, so, after the first act and applied TD 45 Gy irradiation volume is reduced to the primary tumor localization. In the cases of regionally involved lymph nodes (N1) irradiation volume should include lower cervical region of the lymph nodes, as well as the supraclavicular ones bilaterally. In the supraglottis tumor localization, the irradiation volume should include proximal part of trachea and lower cervical, supraclavicular and lower mediastinal lymph nodes. The patient is in a position of supination with adequate support placed under head and neck. Irradiation therapy can be conducted in 2 opposite lateral fields (the most precisely using isocentric technique). Wedge filters of 15 and 30 are used due to natural neck curve. When the lymph nodes are involved in the supraglottis tumors, the mostly used is technique of 3 fields with 2 lateral and the third front field, which includes lower cervical lymph nodes and the ones of the supraclavicular region. Line of separation between the lateral fields and the front one is 0.5-1 cm. 3-Field technique is also required in the supraglottis tumor localization, meaning 2 lateral fields and the front one, which should include trachea proximal part, lower part of the cervical and the supraclavicular pils. Since the lung tips are in the irradiation volume, Pg protection is used. Irradiation therapy is applied using supravoltage machine with high energies, mostly energy of 6 MeV, linear accelerators. Therapeutic dose differs depending on the therapy applied; if radical irradiation therapy is applied, dose range is 70-75 Gy; in the glottis tumors TD 60-65 Gy is applied, in the palliative therapy 40-45 Gy, and the postoperative dose is 60 Gy. Classic, conventional fractioning with individual dose per fraction of 2Gy is the most frequently applied. Lately, alternative fractioning regimens are applied, based on the radiobiology principles of higher probability of the malignant cell lethal hits in the sensitive phase; possibility of the malignant cell repopulation is less and successful recovery of normal tissue. It can be applied as classical hyperfractionated radiotherapy, or continual hyperfractionated accelerated radiotherapy. Better results are expected in treatment of the larynx cancer, especially of stages of advanced locoregional involvement, with development of radiobiology, radiological physics, precise individual planning and application of conformal radiotherapy.

REFERENCE


Address correspondence to:
Petar Miražić, Institute for Oncology and Radiology of Serbia, Pasterova 14, 11000 Belgrade, Yugoslavia

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