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COMPARATIVE STUDY OF RADICAL AND MODIFIED NECK LYMPHODISECTION FOR LARRYNAL CANCER

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ABSTRACT

In the article, the results of treatment between two methods of dissection of regional lymph nodes in patients with cancer of the larynx RG (radical and modified) are studied in the comparative aspect. More effective and better indicators were recorded in patients with modified cervical lymphodissection, which was associated with low trauma of this operation and the possibility of more radical removal of lymph nodes from the deep layers of the neck. There was a significant difference in 2-year survival between modified and revolutionary treatments. Metastases in the deep layers of the neck developed only in patients subjected to radical cervical lymph node dissection. In patients with modified cervical lymph node dissection, metastases to regional lymph nodes were undetected.

KEYWORDS: tumor, lymph nodes, cancer of the larynx, neck, lymph node dissection, radically, modified, metastasis, survival.

INTRODUCTION

To select the correct treatment program for head and neck cancer (HNC), it is necessary to have a complete understanding of the characteristics of primary tumors and the characteristics of cervical metastases. Several patients with squamous cell HNC already at the preclinical stage have changes in the lymph nodes (LN), which is a common cause of failure in their treatment. The problem of choosing treatment tactics arises in patients with locally advanced regional metastases (RM) in the neck, especially when examination reveals involvement of the carotid arteries in the tumor process. The frequency of metastases to regional lymph nodes (RLN) reaches 30%. The most common metastasis from HNC tumors is laryngopharyngeal cancer (LGC) (up to 60%) [4, 6, 9, 16].

Until now, the surgical method of treating RM, independently and in terms of a combined approach, remains one of the leading [13]. However, the use of this method is limited for PMs corresponding to symbols N2 and N3 [4].

Over the past decade, many authors have concluded that there is no need to perform elective cervical lymph node dissection (CLND) in patients with N-positive lymph nodes who have achieved a complete response to radiation therapy (RT) or chemoradiotherapy (CRT) [2, 3, 5, 15]. If it is still carried out, it must be performed using a modified technique [7, 8, 10]. In parallel, the role of CLND is being considered as a diagnostic procedure to detect micrometastases in N0, thereby serving as a preventive treatment for PM. This is commonly referred to as staging-selective CLND and is often used for oral tumors [17] to prevent the risk of micrometastasis [1, 11, 12].

Goal of the work: a comparative study of treatment results between two methods of dissection RLN for laryngeal cancer (LC) (radical and modified).

MATERIAL AND METHODS

Of 615 patients, tumors of the pharynx were observed in 258 patients (nasopharynx - 101, oropharynx - 93, laryngopharynx - 64), oral mucosa - 160, of which the tongue - 52, floor of the mouth - 42, lower jaw - 36, cheek - 30 and 197 patients with laryngeal tumors. The medical records of these patients were treated and analyzed. Patients (retrospective analysis - 336 patients) whose medical records were incomplete regarding information on the clinical outcome after external beam RT or in the absence of a histological examination report were excluded from the study.

The main group consisted of 279 patients with tumors of the oropharyngeal region (OPR) with metastases to the neck lymph nodes. Three hundred thirty-six patients were included in the control group. All patients received combined and complex treatment by international standards. The difference in the compared groups was as follows: patients in the leading group underwent a modified CLND (MCLND) developed by us, and in the control group, classical radical CLND (RCLND) according to the Crail type (operations on the regional lymphatic collector).

Of the 615 patients with OPR tumors, 522 men and 93 women were present. The average age of the patients was 57 ± 4.27 years. All patients were subject to a thorough examination. RT and CRT were used as a postoperative intervention or as part of simultaneous chemotherapy and radiation therapy, which can significantly increase the effectiveness of treatment of patients with common forms of LC and increase the number of patients undergoing organ-preserving treatment.

Irradiation was carried out with a photon beam on 60Co γ-therapeutic devices (1.25 MV) or a linear accelerator (4-8 MV), as well as with an electron beam (6-12 MeV). Irradiation was carried out daily from each field—single dose per lesion 2 Gy. When treated according to a radical program, the SOD is 70 Gy.

The LN of the neck on both sides was included in the irradiation area of the larynx. If necessary, irradiation of the LN of the lower neck was performed in patients using a direct field with a block. The lower edge of the straight area passed 1 cm below the lower edge of the clavicles. If the supraclavicular LN was affected, the LN of the upper mediastinum was irradiated. If there was insufficient regression of metastases after treatment and their resectability, RCLND was performed. A laryngeal version of this operation was performed for tumors within the larynx without including the tissue of the submandibular region. When LC spreads to the oropharynx or laryngopharynx, the tissue block of the removed tissue also has tissue from the chin and submandibular region with the submandibular salivary gland on the affected side.

With complete regression of the primary tumor focus and metastases, dynamic observation, RCLND, or MCLND were performed in patients with initial N2–3.

Surgery at the primary tumor site with CLND and simultaneous CRT or RT was performed in the following cases: for N1, laryngectomy was performed with resection of the thyroid lobe on the affected side with radical or modified CLND (N1) and contralateral selective CLND; for N2–3, laryngectomy was performed with resection of the thyroid lobe on the affected side with unilateral or bilateral RCLND or MCLND (in case of unilateral metastases, contralateral selective CLND was performed).

Postoperative simultaneous CRT and RT were performed in the presence of a tumor at the cutting edge with extracapsular spread of metastases, multiple metastases, and perineural/lymphatic/vascular invasion. Postoperative simultaneous CRT and RT were performed in the presence of tumor at the cutting edges, perineural/lymphatic/vascular invasion, and the presence of multiple metastases identified during morphological examination of prophylactically removed LN (pN+).

Subglottic cancer of the larynx is characterized by low sensitivity to radiation and drug treatment. Therefore, treatment began with radical surgery for these tumors, especially their spread to adjacent anatomical parts. The larynx was removed with the thyroid lobe on the side of the tumor location. In the postoperative period, radiation or simultaneous CRT and radiation treatment was performed (the choice of method was determined by the presence of risk factors

and the radicality of the surgical intervention). During postoperative treatment, areas of the RLN, including paratracheal areas, were necessarily irradiated.

For drug therapy, 5-fluorouracil preparations were used at 800-1000 mg/m2 of body surface per day on days 1–5 and platinum preparations at 100 mg/m2 of the patient's body surface per day on day 1. Drug infusion was carried out intravenously. The results of neoadjuvant CRT in patients with OPR tumors were assessed after completion of the second course according to WHO recommendations (Brussels 1979).

Statistical methods. Survival was calculated (based on the date of diagnosis to the date of death registration) until December 31, 2012. Survival curves were derived using the Kaplan Meier method.

When analyzing cause-specific survival and mortality associated with head and neck tumors, censored observation of time of death was used. The survival period difference test was performed using the log-ranktest.

Statistical processing of the results was carried out using the SPSS for Windows version program 17.0.1 (SPSS Inc., Chicago, IL).

RESULTS AND DISCUSSION

Between patients undergoing RCLND and MCLND, from start of treatment to CRT or RT was up to 12 months. After treatment, there was no difference in the range of movements in the neck and mouth opening. There was a significant decrease in all three parameters of neck range of motion and mouth opening ability in patients after RCLND and MCLND for 2 months. after treatment ($p<0.001$). After 12 months After treatment, there was still a significant reduction in neck rotational movements.

There was also no effect on the assessed parameters at any time during the first year of RCLND.

In addition, there was no significant difference in the duration of lymphedema between the two groups at 12 months. The number of patients in the group after 12 months. became smaller than initially due to loss of patients from relapse or death (N = 33), as well as for unknown reasons (N = 24). Relapses of the primary lesion occurred equally frequently in both the study (7.9%) and control groups (8.9%) (9/113 and 13/145, respectively). The development of metastases in the deeper layers of the neck occurred mainly in patients with RCLND (17/145, 11.7%) and was three times higher than in MCLND (3/113, 2.7%).

The total number of patients with shoulder dysfunction after CLND was 17.0% (44/258). There was a sizeable quantitative difference between patients who underwent MCLND (14/113, 12.4%) and those who underwent RCLND (30/145, 20.7%). However, there was no significant difference in the prevalence of swallowing disorders between RCLND patients (47/145, 32.4%) and post-MCLND patients (34/113, 30.1%) ($p = 0.053$).

Comparisons of cervical range of motion and mouth opening between patients after RCLND and MCLND were as follows: range of cervical range of motion and mouth opening range after 12 months. Treatments were satisfactory in 67 and 52 patients ($p>0.05$).

There were no significant differences in weight loss between the study (–5.9 kg) and control groups (–6.2 kg). There was a slight difference in the rate of patients with >10% weight loss in the control group, but this difference was not significant. The overall 2-year survival rate for all study patients (n=258 at the beginning of the second year, n=194 patients) was 74.7% (n=145). There was a significant difference in 2-year survival between the study (n=89; 78.8%) and control groups (n=105; 72.4%) (logrank, p=0.49). The existing 5% difference is because in patients undergoing RCLND, relapses of metastases in the deep layers of the neck occurred more often. The 5-year survival rates of patients varied significantly. In patients in the control group, this figure did not exceed 52.2% (83/145 patients), while in the main group, this figure was 78/113 patients (69%) ($p <0.01$). Below, we present data on the 5-year survival rate of patients depending on the CLND method performed (table 1).

Table 1. Results of 5-year survival of patients with LC in patients of the main and control groups.

Surgical method of treatment	2-year survival rate	5-year survival rate
RCLND, n=145	105 (72,4%)	83 (52,2%)
MCLND, n=113	89 (78,8%)	78 (69%)
Total n=258	194 (75,2%)	161 (62,4%)

As expected, more effective and better indicators were recorded in patients with MCLND, which was associated with the low traumatic nature of this operation and the possibility of more radical removal of LN from the deep layers of the neck.

CONCLUSIONS

1. There was a significant difference in 2-year survival between MCLND (n=89; 78.8%) and RCLND (n=105; 72.4%) (logrank, p=0.49).
2. The 5-year survival rate of patients differed significantly between groups. In patients undergoing RCLND, this figure did not exceed 52.2% (83/145 patients), while in the group of patients who underwent MCLND, this figure was 78/113 patients (69%) (p <0.01).
3. Metastases in the deep layers of the neck developed only in patients undergoing RCLND. In patients with MCLND, metastases in the RLN were not detected.

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