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abstract

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Experience with chemoradiotherapy in children with undifferentiated nasopharyngeal cancer

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Introduction: The incidence of undifferentiated nasopharyngeal cancer (NPC) in children who live in non-endemic regions is no more than 1% of all malignant tumors of childhood. Despite the high sensitivity of the tumor to chemo-radiation therapy and a high five-year survival rate in patients with localized stages and metastases to lymph nodes, treatment outcomes for patients with disseminated nasopharyngeal cancer remain low. Objective is to report the experience of treating children with undifferentiated nasopharyngeal cancer in a third-level medical organization.

Methodology: Between 2000 and 2020, 60 patients diagnosed with nasopharyngeal cancer were included in the study, who were observed and treated in the DOIG Research Institute. The median age of patients at the start of treatment was 13.5 years, boys predominated – 40 (67%). All patients underwent histological and immunohistochemical examination to verify the diagnosis. Local prevalence was assessed using

MRI or CT scans of the nasopharynx, paranasal sinuses, and brain. Based on the results of ultrasound of the soft tissues of the neck, the lymph nodes of the neck were assessed.

All patients underwent CT scanning of the chest and ultrasound of the abdominal organs. 18-Fluorodeoxyglucose PET-CT was performed for diagnosis and evaluation of treatment response in 39 (65%) patients. Treatment of patients was carried out in accordance with clinical recommendations, which were formulated by employees of the Research Institute of Children's Oncology and Hematology and approved by the Ministry of Health of Russia in 2017, however, the design was developed earlier, so 80% of patients underwent chemoradiotherapy according to a similar scheme.

Results: In the studied group, patients with stage IV prevailed – 33 (55%), III – 33 (42%), IIb – 2 (3%).

Distant metastases in the lungs and bones (stage IV) were observed in 8 (13%) patients. In all cases, induction chemotherapy was performed, which included 4 courses of bleomycin 10 mg/m² on days 2 and 4, vinblastine 5 mg/m² on days 1, 8, 15, cyclophosphamide 600 mg/m² on day 1, and doxorubicin 20 mg./m² on days 1 and 8.

Simultaneously with chemotherapy, immunotherapy was carried out with an interferon inducer – sodium oxydihydroacridinyl acetate 5 mcg/kg every 48 hours, 7-10 injections per course in 29% (48%) of patients. The results of chemo-immunotherapy were assessed before the start of RT. In the group of patients with stage IV tumors who additionally received immunotherapy, a complete and partial response was more often achieved in 94% of cases (p = 0.009). Radiation therapy to the nasopharynx and neck lymph nodes was carried out in 54 (90%) patients, irradiation dose was 55 Gy, prophylactic irradiation of the lymphatic collector was performed at 36 Gy. Areas of distant metastasis were irradiated in 8 (13%) patients.

Courses of adjuvant chemotherapy included vinblastine 5 mg/m² on days 1 and 8, cyclophosphamide 500 mg/m² on days 1 and 8; dactinomycin 1200 mcg/m² 1 day i.v. were performed in 46 (75%) patients. The observation period after completion of treatment was 9 months – 14 years, the five-year overall survival rate was 76%. In the group of patients with immunotherapy, there was a trend towards improved overall survival rates of 82.7% vs 70% compared with those who received chemoradiotherapy alone, p=0.33.

Conclusion: No reliable influence of sex, age, or addition of immunotherapy to the treatment program on the indicators of overall and recurrence-free survival in children with undifferentiated nasopharyngeal cancer has been identified. However, the addition of the interferon inducer showed a reliable increase in complete and partial tumor responses in patients with common and disseminated stages of undifferentiated nasopharyngeal cancer.