

Treatment of Papillary Thyroid Carcinoma Metastasis to the Sternum: A Case Report

Authors : Geliashvili T. M., Tyulyandina A. S., Valiev A. K., Kononets P. V., Kharatishvili T. K., Salkov A. G., Pronin A. I., Gadzhieva E. H., Parnas A. V., Ilyakov V. S.

Abstract : Aim/Introduction: Metastasis (Mts) to the sternum, while extremely rare in differentiated thyroid cancer (DTC) (1), requires a personalized, multidisciplinary treatment approach. In aggressively growing Mts to the sternum, which rapidly become unresectable, a comprehensive therapeutic and diagnostic approach is particularly important. Materials and methods: We present a clinical case of solitary Mts to the sternum as first manifestation of a papillary thyroid microcarcinoma in a 55-year-old man. Results: 18F-FDG PET/CT after thyroidectomy confirmed the solitary Mts to the sternum with extremely high FDG uptake (SUVmax=71,1), which predicted its radioiodine-refractory (RIR). Due to close attachment to the mediastinum and rapid growth, Mts was considered unresectable. During the next three months, the patient received targeted therapy with the tyrosine kinase inhibitor (TKI) Lenvatinib 24 mg per day. 1st course of radioiodine therapy (RIT) 6 GBq was also performed, the results of which confirmed the RIR of the tumor process. As a result of systemic therapy (targeted therapy combined with RIT and suppressive hormone therapy with L-thyroxine), there was a significant biochemical response (decrease of serum thyroglobulin level from 50,000 ng/ml to 550 ng/ml) and a partial response with decrease of tumor size (from 80x69x123 mm to 65x50x112 mm) and decrease of FDG accumulation (SUVmax from 71.1 to 63). All of this made possible to perform surgical treatment of Mts - sternal extirpation with its replacement by an individual titanium implant. At the control examination, the stimulated thyroglobulin level was only 134 ng/ml, and PET/CT revealed postoperative areas of 18F-FDG metabolism in the removed sternal Mts. Also, 18F-FDG PET/CT in the early (metabolic) stage revealed two new bone Mts (in the area of L3 SUVmax=17,32 and right iliac bone SUVmax=13,73), which, as well as the removed sternal Mts, appeared to be RIRs at the 2nd course of RIT 6 GBq. Subsequently, on 02.2022, external beam radiation therapy (EBRT) was performed on the newly identified oligometastatic bone foci. At present, the patient is under dynamic monitoring and in the process of suppressive hormone therapy with L-thyroxine. Conclusion: Thus, only due to the early prescription of targeted TKI therapy was it possible to perform surgical resection of Mts to the sternum, thereby improve the patient's quality of life and preserve the possibility of radical treatment in case of oligometastatic disease progression.

Keywords : differentiated thyroid cancer, metastasis to the sternum, radioiodine therapy, radioiodine-refractory cancer, targeted therapy, lenvatinib

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