CASE REPORT – OPEN ACCESS

International Journal of Surgery Case Reports 41 (2017) 89–92

Contents lists available at ScienceDirect

International Journal of Surgery Case Reports

journal homepage: www.casereports.com

Surgical treatment of locally advanced papillary thyroid carcinoma after response to lenvatinib: A case report

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ARTICLE INFO

Article history:
Received 18 August 2017
Received in revised form 6 October 2017
Accepted 6 October 2017
Available online 14 October 2017

Keywords:
Case report
Papillary thyroid carcinoma
Lenvatinib
Neoadjuvant chemotherapy

ABSTRACT

INTRODUCTION: Differentiated thyroid carcinomas (DTC) have good prognoses after complete resection. Nevertheless, when DTC is associated with an aerodigestive invasion, curative surgery is difficult to perform. However, there is no established neoadjuvant therapy for advanced DTC.

PRESENTATION OF CASE: A 73-year-old man with thyroid papillary carcinoma was referred to our hospital. A computed tomography examination revealed a tumor in the upper right lobe of the thyroid, and multiple bilateral enlarged lymph nodes in the neck, involving the surrounding structures. The enlarged lymph node at the right upper neck was suspected to have invaded the right internal jugular vein, and the left paratracheal lymph node was suspected to have invaded the cervical esophagus and trachea. The tumor was considered resectable; however, surgery would have been highly invasive. Therefore, we initiated neoadjuvant therapy with lenvatinib. After administration of lenvatinib, the tumor decreased in size by 84.3% and the cervical lymph nodes by 56.0%. The patient underwent a total thyroidectomy, modified neck dissection, a resection of the muscular layer of the esophagus, and a tracheal sleeve resection and reconstruction.

DISCUSSION: The SELECT trial demonstrated that lenvatinib had high response rate with short response time, in patients with radioiodine-refractory DTC. The results suggested that lenvatinib could be effective as neoadjuvant therapy.

CONCLUSION: For an advanced DTC that requires removal through invasive surgery, preoperative lenvatinib treatment might be one of the options for a less invasive surgery.

1. Introduction

Generally, differentiated thyroid carcinomas (DTC) have good prognoses after complete resection; most patients with DTC are treated with a primary surgery. However, we sometimes encounter patients with locally advanced DTC, which has invaded surrounding structures. Direct invasion of the larynx, trachea, pharynx, esophagus, recurrent laryngeal nerve, strap muscles, and/or carotid artery occurs in 7–16% of patients with thyroid cancer [1]. The treatment strategy is difficult in such cases because it is difficult to resect completely, a locally advanced DTC without invasion of these critical structures.

Guidelines of the American Thyroid Association [2] recommend that the surgical removal of an aerodigestive invasive DTC should be performed in combination with radioactive iodine (RAI) therapy, and/or external beam radiotherapy. However, there are few institutions permitted to perform RAI therapy in Japan because of severe restrictions in the handling of RAI. Therefore, a patient in need of RAI will have to wait for an unreasonable length of time to have access to the therapy. Moreover, a neoadjuvant external beam radiation therapy can lead to fibrosis, which can make surgery even more complicated for the surgeon.

Lenvatinib is an oral, multitargeted tyrosine kinase inhibitor (TKI) of the VEGFRs 1–3, FGFRs 1–4, PDGFR α, RET, and KIT signaling networks [3,4]. Previously reported results of the SELECT trial demonstrated that lenvatinib significantly prolonged progression-free survival (PFS) in patients with RAI-refractory DTC, compared with those on placebo [5]. Based on this and several other reports [6,7] about the role of chemotherapy in DTC, unresectable locally advanced DTC that invades critical structures can become resectable after neoadjuvant chemotherapy with lenvatinib. However, there has been no report on neoadjuvant chemotherapy in advanced DTC with TKI.

We report on a locally advanced papillary thyroid carcinoma, which was difficult to resect because of invasion of the jugular vein, trachea, and esophagus, in a 73-year-old man who underwent surgery after preoperative chemotherapy with lenvatinib.

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https://doi.org/10.1016/j.ijscr.2017.10.010

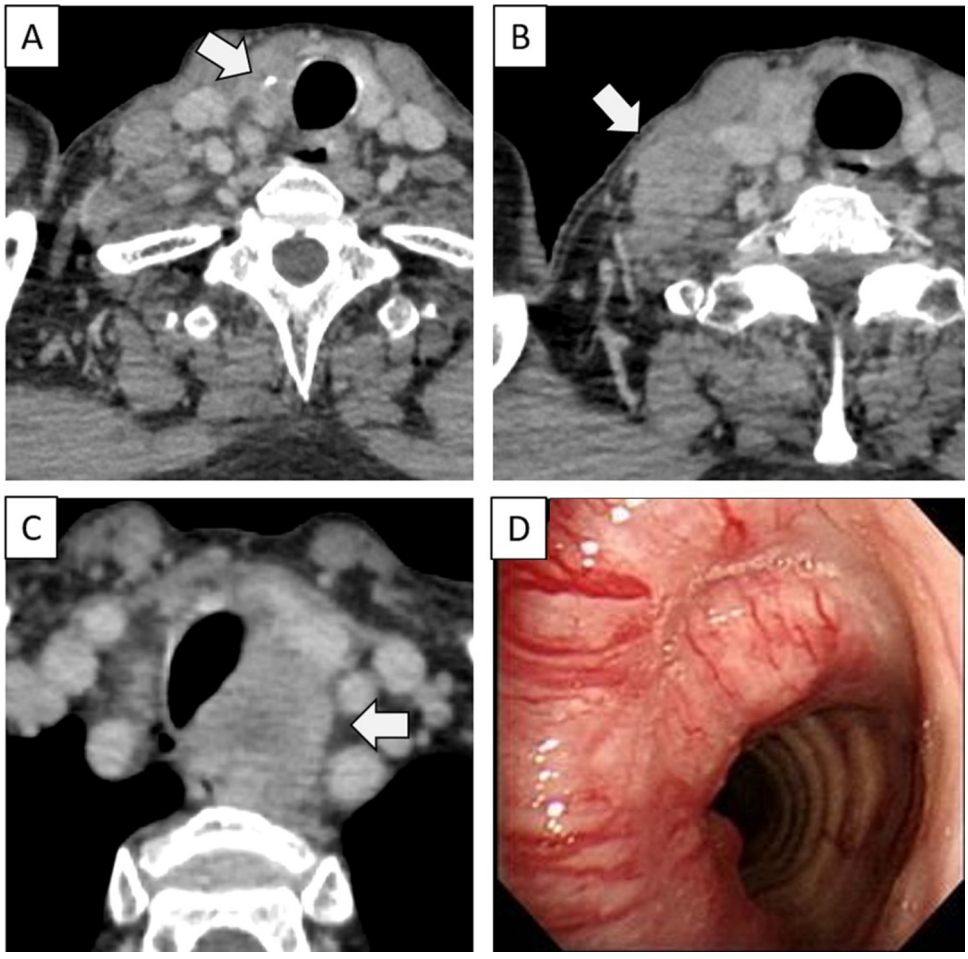

Fig. 1. A computed tomography examination revealed a mass, measuring 18 × 17 mm in the upper right lobe of thyroid (A) and swollen lymph nodes in neck: the lymph node at the right upper neck suspected invasion of right internal jugular vein (B), the left paratracheal lymph node suspected invasion of cervical esophagus and trachea (C). Bronchoscope examination revealed tumor invasion in tracheal lumen (D).

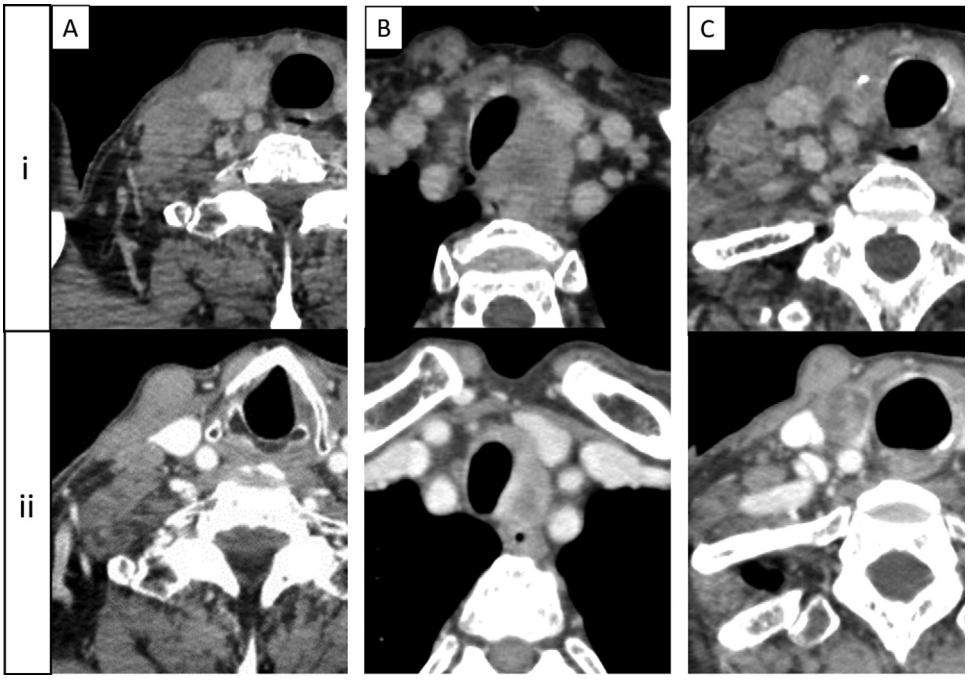

Fig. 2. A computed tomography examination showed tumor reduction: (A) lymph node at the right neck decreased in size by 84.3%, (B) left parabronchial lymph node decreased in size by 56.0%, and (C) thyroid tumor decreased in size by 5.9%. (i) before treatment, (ii) after treatment.