Twice Operations for Parotid Metastasis of Nasopharyngeal Carcinoma Patient after Radical Intensity-Modulated Radiotherapy: A Case Report

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Abstract: The surgery treatment of parotid metastasis of nasopharyngeal carcinoma (NPC) after parotid-gland-sparing IMRT is rare report. We present such a case of NPC patient cT2N2M0 with parotid lymph node metastasis after parotid-gland-sparing IMRT patient who accepted the second operation after the first failure parotid section. This case reminded us that neck dissection added the whole parotid gland resection may be an appropriate method to treat this type of patients.

Keywords: Nasopharyngeal carcinoma, Parotid lymph node metastasis, Prognosis, Intensity-modulated radiotherapy, Surgery.

1. INTRODUCTION

Nasopharyngeal carcinoma is the most commonly diagnosed malignant cancer in Southern China, and radiotherapy is the mainstay treatment for NPC [1,2]. Although 85% of cases of preliminarily diagnosed NPC involve cervical lymph node metastasis, parotid lymph nodes (PLNs) were rarely and with an incidence rate of only 1.0%–3.4% [3,4]. Therefore, little attention has been given to PLN metastasis in patients preliminarily diagnosed with NPC. Recently, the use of intensity-modulated radiation therapy (IMRT) not only provided improved loco-regional control but also had better protection for parotid glands to reduce xerostomia [5,6]. However, subsequent studies have demonstrated that over-protection of the parotid gland resulted in a few cases of PLN recurrence after treatment of NPC with IMRT [7–9], which suggested that potential or definite PLN metastasis in preliminarily diagnosed patients might be neglected in clinical practice.

Today, we are also absence the experience of surgery about the PLN metastasis. In this article, we report one case of PLN metastasis of nasopharyngeal carcinoma after radical IMRT which was accepted the second operation after the first failure parotid section.

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CASE REPORT

A 58-year-old male was admitted to our hospital with swelling in the right ear for 10 days without significant other clinical manifestations such as epistaxis, headache, bleeding in the nasal cavity, unilateral nasal congestion, single-ear pain, tinnitus, hearing loss, etc. After a comprehensive evaluation including a medical history, physical examination, nasopharyngoscopy, blood biochemistry, nasopharyngeal and neck Computerized Tomography (CT) examination, chest radiography, abdominal ultrasound, and whole-body bone scanning, this patient was diagnosed as NPC with T2N2M0 classification, stageIII according to the 7th edition of the UICC/AJCC staging system, and histopathology is World Health Organization (WHO) type II Disease. This patient had no parotid lymph nodes metastasis (Figure **1-CT a**).

This patient received definitive IMRT treatment for nasopharyngeal and neck tumor in the entire course. According to the national comprehensive cancer network (NCCN) guidelines, this patient was given platinum-based chemotherapy. After 3 months of the entire treat course, this patient was found only one nodule with the largest diameter approximately 1.0 cm on the surface of the right parotid gland without other area metastatic (Figure **1-CT b**). This patient then accepted tumor excision including part of parotid gland resection, and the pathology was the same as the original NPC. This patient accepted the subsequent one Taxol -based chemotherapy. After 1 month of the

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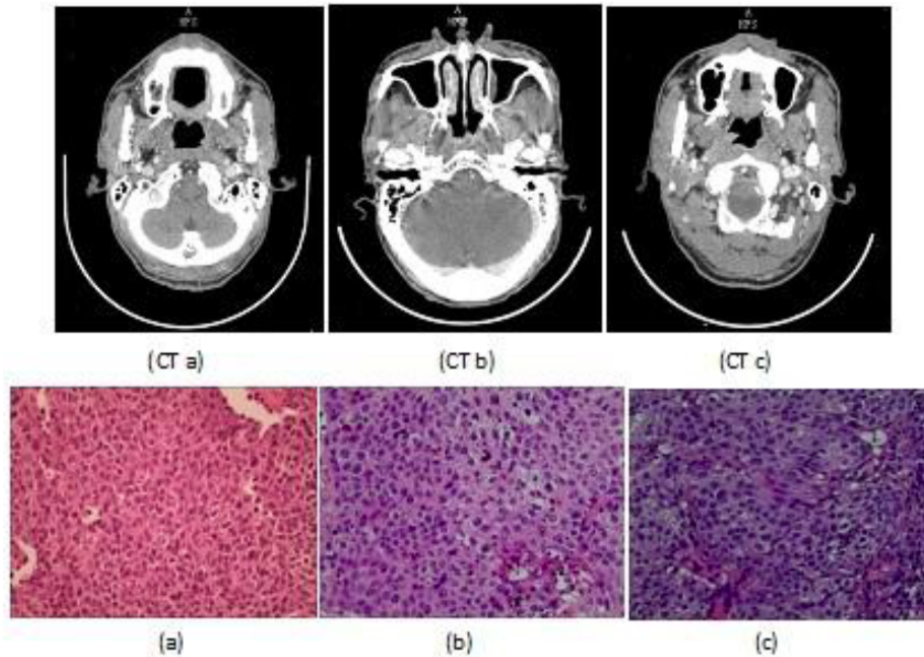

Figure 1: Computer tomography showed NPC had no parotid lymph nodes metastasis before radiotherapy (**CT a**), and had one parotid lymph node metastasis after radiotherapy (**CT b**), and at last had several parotid lymph nodes metastasis after first operation (**CT c**). Histopathology showed nasopharyngeal carcinoma (**a**) was the same as the first metastatic parotid lymph nodes (**b**) and the second metastatic parotid lymph nodes (**c**) (hematoxylin and eosin staining; magnification, ×400).

first operation, the patient found another diameter approximately 2.0 cm nodule in the level Ⅱ of the right neck. The results of CT indicated bilateral cervical level Ⅱ lymph nodes metastasis (Figure **1-CT c**). So, this patient accepted bilateral cervical Ⅰ-Ⅳ dissection and the right submandibular gland and whole right parotid gland resection. The pathology of last time was also as same as the original NPC (Figure **1a**, **b**, **c**). Follow-up for 9 months, this patient has no tumor recurrence and metastasis.

DISCUSSION

The parotid group nodes receive lymphatic drainage mostly from cutaneous sites such as the frontal and temporal skin, eyelids, external acoustic meatus, and root of the nose, but other regions, including the nasopharynx, are also potential foci [10, 11]. Although parotid metastasis of NPC were rarely, research has shown that initial PLN metastasis in NPC was proven to be an adverse prognostic factor for overall survival (OS), progression-free survival (PFS), distant metastasis-free survival (DMFS), and regional relapse-free survival (RRFS) in patients preliminarily diagnosed with NPC [12]. So, sparing parotid in IMRT was not recommended for NPC patients with high risks of PLNM, and more aggressive therapeutic strategies are recommended for NPC with PLN metastasis to reduce distant metastasis [12,13]. Sum of the largest diameter(SLD) ≥5 cm in level II and involvement in rare-neck areas may be potentially high-risk factors for PLNM [13]. This patient with NPC T2N2M0 classification also appeared parotid lymph nodes metastasis after definitive parotid-gland-sparing IMRT. The case reminds us that we still need to pay attention to the parotid lymph nodes metastasis risk of low N stage NPC.

In 2008, Cannon and Lee first reported on two patients with NPC who developed periparotid failure after definitive parotid-gland-sparing IMRT [7]. Subsequently, several authors reported some patients with NPC were found to have periparotid recurrence after parotid-gland-sparing IMRT, who considered that over-protection of the parotid gland may be correlated with the development of recurrence [9,14]. However, we were short of sufficient evidence about the prognostic of periparotid recurrence after parotid-gland-sparing IMRT and the effective method of treatment. After the first radiotherapy, radiologist did not carried out radiotherapy again because of the possible poor efficiency and serious side effects. Because this patient didn't accept the radical surgery therapy when he was diagnosed parotid lymph nodes metastasis, we applied part of parotid gland resection and chemotherapy. To our disappointment, the other areas of lymph nodes metastasis was appear as the time as chemotherapy. After the second operation, this patient has no tumor

and lymph nodes recurrence and metastasis until now about 10 months.

In conclusion, we should pay attention to parotid metastasis of NPC patient after radical IMRT, neck dissection with the whole parotid gland resection may be an appropriate method for treatment.

ABBREVIATIONS

NPC = Nasopharyngeal Carcinoma

PLNs = Parotid Lymph Nodes

IMRT = Intensity-modulated Radiation Therapy

WHO = World Health Organization

OS = Overall Survival

PFS = Progression-free Survival

DMFS = Distant Metastasis-free Survival

CONFLICTS OF INTEREST

The authors declare no potential conflicts of interest.

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