

## Case Report

# Nasopharyngeal metastasis of rectal cancer: a case report and review of the literature

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Received October 14, 2015; Accepted November 28, 2015; Epub February 1, 2016; Published February 15, 2016

**Abstract:** Colorectal cancer is one of the most frequent neoplasm diseases around the world with relatively poor prognosis. The usual sites of metastasis include liver and lung through lymphatic or hematogenous spread. As far as we are concerned, rectal cancer with nasopharynx metastasis has never been reported in the English literature. We present a case of a 59-year-old female patient who was found abnormal mass tissue in the nasopharynx through enhanced CT scan one year after surgical resection of rectal carcinoma. Immunohistochemical analysis of biopsy specimen demonstrated that the tumor cells were CDX-2 (+), CK20 (+), Villin (+), KI67 (80%+), CK7 (-) and TTF-1 (-). Therefore, the diagnosis of rectal cancer with nasopharynx metastasis was made. The patient then underwent 3 cycles of adjuvant chemotherapy. Possible etiology and management therapy of this rare metastasis will be discussed in the paper with a review of previous literature.

**Keywords:** Nasopharynx, metastasis, rectal adenocarcinoma

### Introduction

Rectal cancer has become an increasingly common disease in western countries, largely because of life style and nutrition factors [1]. In China, colorectal cancer is the fifth most common cancer and the fifth leading cause of cancer death in 2011, with estimated new cases of 178,404 and an incidence of 25.83/1,00,000 [2]. Though mortality has dropped noticeably since 1980s with the improvement of diagnosis and therapy, the malignant tumor still put threat to survival and quality of life. The most common metastasis sites of rectal cancer are liver and lung [3]. Metastasis to nasopharynx from primary rectal lesions is an extremely rare event due to anatomical barriers and the long distance. Herein we report a case of a 59-year-old female patient with such presentation which to our best knowledge, has never been reported in the English literature so far.

### Case report

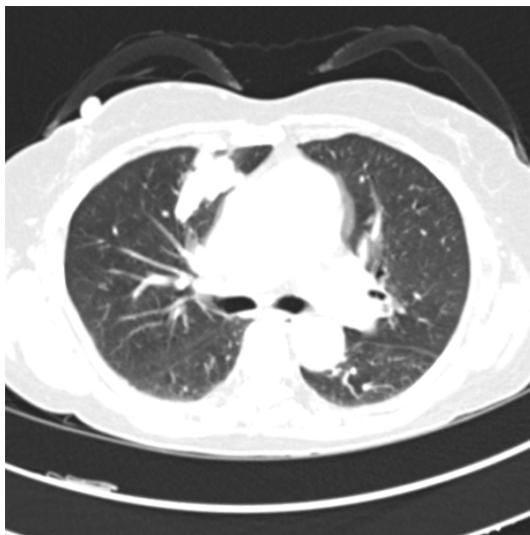
In April 2014, a 59-year-old female patient was referred to Xiangya Hospital, China, due to he-

mafecia for over a year which got worse three months ago. After admission, several laboratory tests were completed in which fecal occult blood test came back positive. A circumferential, firm, mobile rectal mass was palpable approximately 1 cm from the anal verge accompanied with tenderness and megascopic blood in the digital rectal examination. An irregular thickening of the low rectal wall and an intraluminal mass were shown using Computed Tomography (CT) scans, as well as some nodules in the anterior segment of right upper lung. Given all these findings, rectal cancer was diagnosed and laparoscopic assisted abdominoperineal resection was performed. Postoperative pathological examination of the surgical specimen found a 6×5×5 cm in size ulcerated mass. Macroscopic examination results indicated moderately differentiated adenocarcinoma with whole layer invasion. There was no sign of tumor emboli in the vein or neuron invasion. Twenty lymph nodes were removed in the surgery and eleven of these were positive for rectal carcinoma. Subsequently, the patient under-

## Nasopharynx metastasis of rectal cancer



**Figure 1.** CT scan of nasopharynx structure. Homogeneous medium degree enhancement of the mass can be seen on the top and double sides of nasopharynx, parapharyngeal space of both side was involved.



**Figure 2.** Enhanced CT scan of lung structure. In the anterior segment of right upper lung showed homogeneous strong degree enhancement of the mass.

went three cycles of chemotherapy (FOLFOX4 plus Cetuximab) and was discharged later.

In July 2015, the patient was admitted into our hospital again for postoperative examination. During the clinical examination, several enlarged lymph nodes were palpable. B-ultrasonography revealed multiple enlarged cervical lymph nodes. Pale-looking, non-smooth, crust covered neoplasm was found on the top of

nasopharynx by fiberoptic endoscope. In nasopharynx enhanced CT scan images, mass could be seen on the top and double sides of nasopharynx, parapharyngeal space of both side was involved. Part of the lesion extended anteriorly into the right nasal cavities (**Figure 1**). Multiple cervical lymphadenectasis was revealed with partial fusion. Enhanced CT scan of her chest presented a 4.2×2.3 cm nodule in the anterior segment of right upper lung, a 2.2×2.3 cm nodule in the posterior segment of upper left lung and calcified lesions were seen in lower right lung (**Figure 2**). Two weeks after the patient was admitted, nasopharynx biopsy was performed. Microscopic examination of the tissue found small amount of adenocarcinoma cells while most of which demonstrated to be necrotic tissue. Further immunohistochemical analysis of the biopsy specimen proved positive for CDX-2, CK20, Villin and 80% positive for KI67 while CK7 and TTF-1 were negative (**Figure 3**). Biopsy of the posterior segment of upper left lung and pathological analysis later confirmed lung metastasis from the primary rectal carcinoma. Eventually, considering the examination results above and medical history of the patient, she was diagnosed with nasopharynx and lung metastasis of rectal adenocarcinoma.

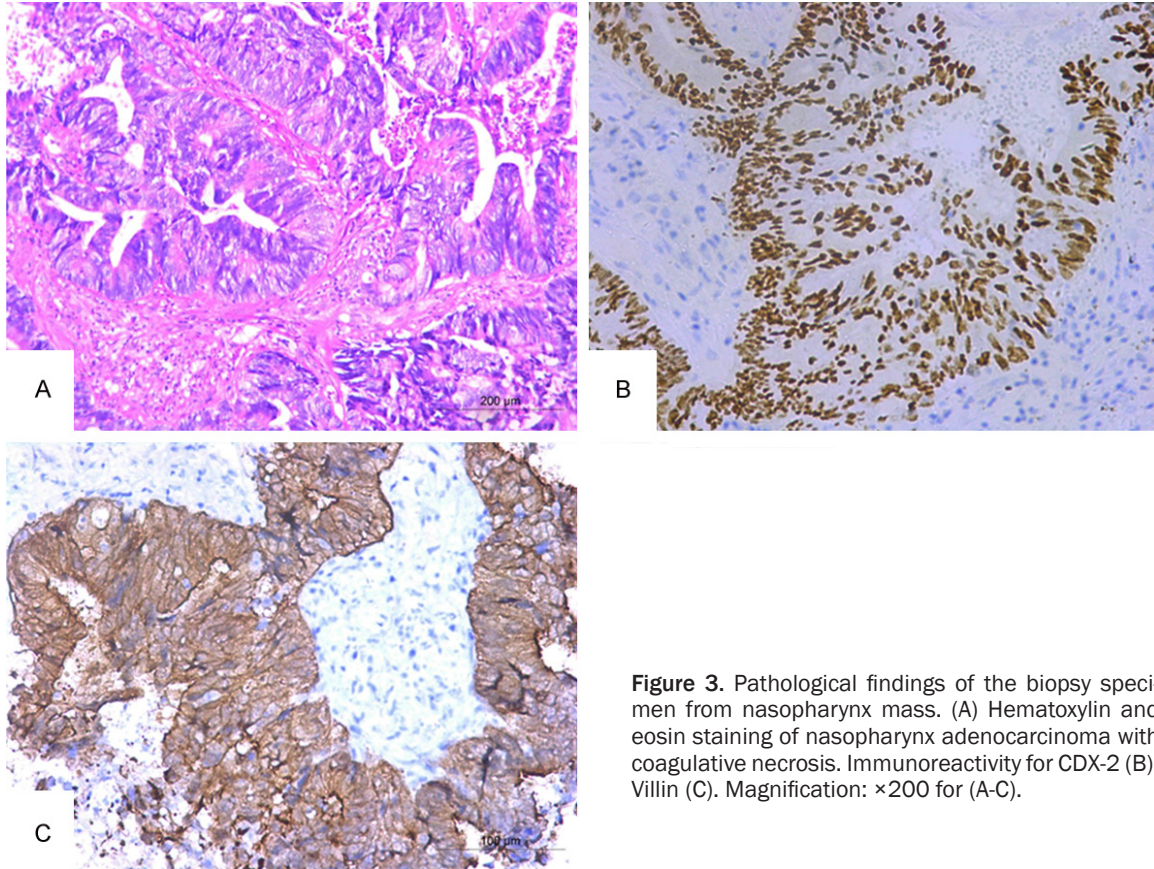
The patient was then offered adjuvant chemotherapy (FOLFOX4 plus Cetuximab) and completed the first cycle at August 5<sup>th</sup>.

### Discussion

Nasopharynx metastasis from malignant tumors outside the head and neck region seldom happen which only account for only 1% of all malignant diseases at nasopharynx [4]. When this kind of metastatic tumor does occur, most of them came from renal cell carcinoma [5-7]. Recent cases also include metastasis from hepatocellular carcinoma [8], lung squamous cell carcinoma [9], and breast cancer [10]. The symptoms of nasopharynx metastasis usually are nasal obstruction, backsiphon haemorrhagia nasalis, etc. Due to the unique anatomical position of nasopharynx, such metastasis could become symptomatic and difficult to control because of its potential to invade the base of the skull [9].

The colon and rectum together constitute the most common site for cancer in men and second most common site for women [11]. Death

## Nasopharynx metastasis of rectal cancer



**Figure 3.** Pathological findings of the biopsy specimen from nasopharynx mass. (A) Hematoxylin and eosin staining of nasopharynx adenocarcinoma with coagulative necrosis. Immunoreactivity for CDX-2 (B), Villin (C). Magnification:  $\times 200$  for (A-C).

from colorectal cancer frequently results from manifestations of recurrent local or metastatic disease following initial 'curative' therapy [12]. The two leading metastasis sites of rectum cancer are liver and lung with approximate equal chance while liver metastasis is more common in colon cancer. The difference of spread pattern is thought to be due to the unique blood supply of rectum which drains via the mesenteric-portal system and internal iliac veins into both the portal and systemic veins, respectively [1].

Our case is the first one in the English literature where a patient present with nasopharynx metastasis of rectal cancer. The etiology of nasopharynx metastasis from rectum cancer remains unclear. Since the patient was prone to lung metastasis, it's quite possible that the nasopharynx metastasis was given the path through the lungs [13]. The tumor emboli may travel from rectum to the lung via the middle and inferior hemorrhoidal veins, inferior vena cava followed by the pulmonary circulation, carotid arteries, aorta, common carotid artery,

then though the pharyngeal artery/ascending palatine artery/maxillary artery, finally to the nasopharynx [14].

In recent years, some authors reported increased incidence of metastasis to unusual sites arising from gastrointestinal cancers due to expanded treatment options [15]. Patients in the past may never survive that long for these distant metastasis could ever occur which may also explain why involvement of the nasopharynx from rectal cancer was hardly seen before. However this kind of circumstance can be increasingly common in the future as survival period prolonged.

Since management therapies for primary nasopharynx carcinoma and metastasis tumor which share some similarities in morphology are completely different, accurate and timely diagnosis is required [16]. The definite diagnosis of metastasis involvement is always based on the histological evaluation and immunohistochemical examination which is specifically of great importance. Immune markers include

## Nasopharynx metastasis of rectal cancer

CK20, Ck7, CDX-2 and villin supporting the intestinal source.

Treatment for nasopharynx metastasis primarily relies on palliative radiation for local symptoms and systemic combination chemotherapy. First-line treatments for metastatic rectal cancer include the doublet cytotoxic combinations of fluorouracil, leucovorin, and irinotecan (FOLFIRI), infusional fluorouracil, leucovorin, and oxaliplatin (FOLFOX), and capecitabine plus oxaliplatin (XELOX), as well as the triplet combination fluorouracil, leucovorin, oxaliplatin, and irinotecan (FOLFOXIRI) [17]. The rarity of the case makes it difficult to design any clinical trial to compare efficacy of different treatment approaches. Thus only awareness of this possible problem with timely diagnosis can help to choose the best therapy for a specific patient.

In summary, we present a rare case of rectal cancer with nasopharynx metastasis with typical histological features and immunohistochemical phenotype, which may help with better understanding of rectal cancer's biological behavior and provide valuable clinical information for future diagnosis and treatment.

### Acknowledgements

The authors thank Yong Li in the Department of Pathology for the immunohistochemical staining. This study is supported by grants from Hunan Province Scientific Development Projects (grant No. 12JJ3121) and 2015 Undergraduate Training Programs for Innovation and Entrepreneurship of Central South University (grant No. CX2015486).

### Disclosure of conflict of interest

None.

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