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Case Report

# Concurrent Nasopharyngeal Carcinoma and Renal Cell Carcinoma

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**Abstract**

We report an extremely rare case of synchronous development of two distinct primary tumors, nasopharyngeal carcinoma (NPC) and renal cell carcinoma (RCC). A 47-year-old man with a longstanding smoking history presented with bilateral neck masses. NPC was confirmed by biopsy and a pathology report. However, during the staging process, a left middle renal solid mass was detected by abdominal computed tomography, and the follow-up computed tomography-guided biopsy revealed clear cell type RCC. The patient was treated with concurrent chemoradiation therapy and left nephrectomy for the NPC and RCC, respectively. In addition to the clinically common risk of cigarette smoking for both NPC and RCC, the biological similarity of NPC and RCC cell lines has also been documented in some *in vitro* studies. Awareness of the possible simultaneous occurrence of these two malignancies and inclusion of the nasopharynx and kidneys in the staging processes for RCC and NPC might help shed more light on their clinical correlation. [*Tzu Chi Med J* 2010;22(1):58–60]

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## 1. Introduction

Nasopharyngeal carcinoma (NPC) is a squamous cell carcinoma that occurs in the nasopharyngeal epithelium with an unusually variable incidence rate from 0.5–2/$10^5$ in western countries to 6.5/$10^5$ in Taiwan [1,2]. There are three unique etiologic factors of NPC: genetic susceptibility, chemical carcinogens such as tobacco, and Epstein-Barr virus infection.

Renal cell carcinoma (RCC), which originates within the renal cortex, is responsible for 80–85% of all primary renal neoplasms. RCC accounts for 1.3% of the total cancer mortality in Taiwan [2], and an increasing incidence rate over the past 10 years has been reported [3]. Tobacco smoking has been described as a major risk factor for RCC [4,5].

Both NPC and RCC are known to have a tendency towards early metastasis. One third of patients with RCC have metastatic disease at diagnosis. The most frequent site of distant metastasis for both RCC and NPC is the lung [6]. However, simultaneous NPC and RCC is extremely rare, with only two other cases reported in the English literature. We report here a third case with incidental RCC found during the NPC staging process.

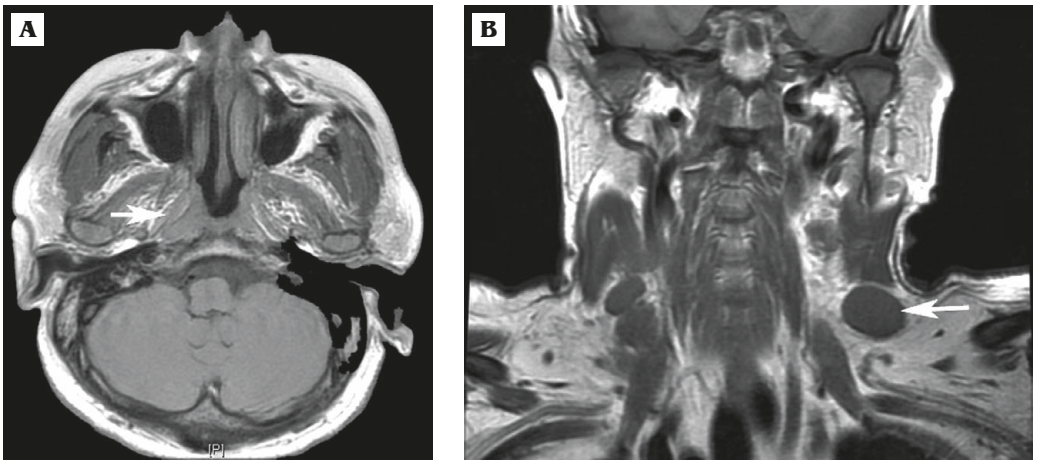



**Fig. 1 — Magnetic resonance imaging of the neck and nasopharynx shows (A) a right subepithelial nasopharyngeal mass, 1.8 cm in diameter, and (B) bilateral lymphadenopathy with the largest lymph node 2.7 cm in diameter.**

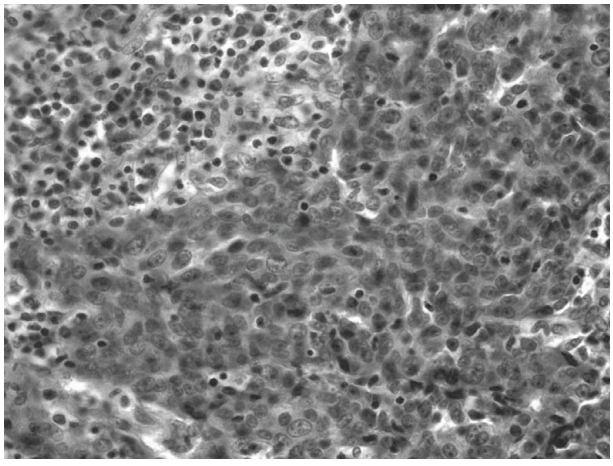


**Fig. 2 — Excisional biopsy of the left level V neck mass shows undifferentiated nasopharyngeal carcinoma, WHO type III (hematoxylin & eosin, 400×).**

## 2. Case report

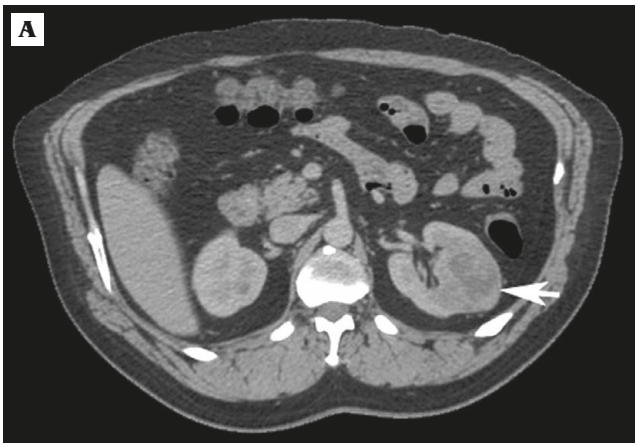
A 47-year-old man was admitted to our hospital because of bilateral neck masses without any symptoms such as nasal obstruction, epistaxis, or serous otitis. He had a history of smoking one and a half packs of cigarettes daily, and had also chewed betel nuts for more than 20 years. His neck masses were immovable and elastic with smooth surfaces. Otolaryngoscopic examination showed no abnormal findings. Magnetic resonance imaging of the neck and nasopharynx revealed a subepithelial nasopharyngeal mass, 1.8 cm in diameter, and bilateral lymphadenopathy (the largest lymph node was 2.7 cm in diameter; Fig. 1). Pathology examination of the excisional biopsy of the left side level V neck lymph node, measuring 2.5 × 2.0 × 2.0 cm, showed a metastatic carcinoma with NPC histology, WHO type III (Fig. 2). During the NPC staging process, abdominal computed tomography detected an incidental solid mass 4.7 cm in diameter, in the middle segment of the left kidney. Computed tomography-guided biopsy of the mass revealed clear cell type RCC (Fig. 3).

The patient received radiotherapy for NPC 2 weeks after the renal biopsy but left nephrectomy was delayed for 4 weeks because of septic arthritis of the right hip. The renal tumor was stage pT1bN0M0 with no invasion to the renal artery, renal vein, ureter or perirenal adipose tissue. Chemotherapy for NPC commenced 2 weeks after nephrectomy. Thirteen months after nephrectomy, the patient was in a stable condition and was followed-up at both the urology and otolaryngology clinics.

## 3. Discussion

Our patient had two distinct synchronous primary tumors, NPC and RCC. To our knowledge, this rare combination has been reported previously in only two patients (7,8), one with concurrent NPC and RCC (8) and one in which RCC was diagnosed 5 years after NPC (7).

The patient received radiotherapy for NPC stage cT1N3bM0 2 weeks after the renal biopsy, but left nephrectomy was delayed for 4 weeks because of septic arthritis of the right hip. Since our patient's NPC stage was stage IVb, the treatment of choice for locally advanced NPC is concurrent chemoradiation therapy (9). The benefit of chemotherapy was confirmed in a meta-analysis of 78 randomized controlled trials (9279 patients) comparing radiotherapy with and without chemotherapy. Radiotherapy proceeded as usual in our patient, but chemotherapy was delayed because of septic arthritis and nephrectomy. The RCC stage



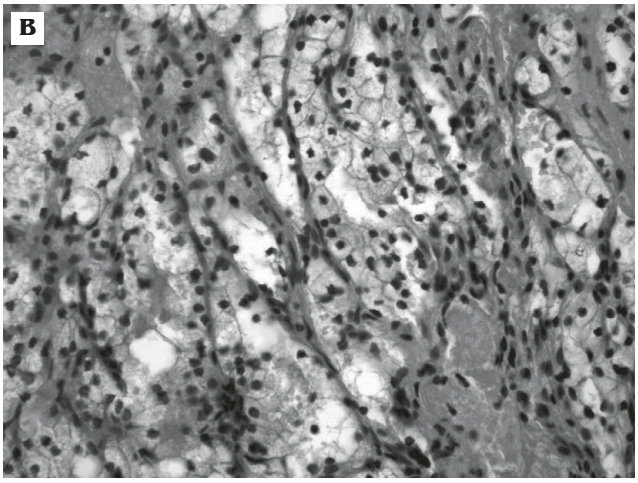




**Fig. 3 — (A) Abdominal computed tomography (CT) reveals a left renal solid mass, 4.7 cm in diameter. (B) CT-guided biopsy of the mass shows clear cell type renal cell carcinoma (hematoxylin & eosin, 400×).**

was pT1bN0M0, stage I and the gold standard treatment is radical nephrectomy without any adjuvant therapy; this was performed after septic arthritis had been controlled. The 5-year overall survival rates of stage IVb NPC and stage I RCC are approximately 58% and 95%, respectively [10,11].

Smoking is a common major risk factor for both NPC and RCC. It has been reported that the probability of developing RCC increases approximately twofold with cigarette smoking and nearly one third of RCC cases involve smoking [4,5]. Furthermore, long-term smoking has been confirmed to be associated with NPC in Taiwan [12].

Interestingly, the biological similarity of *in vitro* NPC and RCC cell lines was implied by one comparative study, in which tumorigenicity was inhibited in both cell lines when chromosome 3 was transferred into the cells [13]. Moreover, treatment of NPC and RCC cell lines with histone deacetylase inhibitors shows a similar pattern of alteration of gene expression [14].

Simultaneous presentation of NPC and RCC is quite rare, and only one case has been reported in the literature. Although little is known about this type of presentation, the similar *in vitro* behavior indicates a link between the NPC and RCC cell lines. Awareness of this simultaneous presentation and inclusion of the nasopharynx and kidneys in the screening and staging processes of RCC and NPC might result in detection of more analogous cases and help elucidate their clinical relevance.

## Acknowledgments

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