

## Biopsy-Proven Transitional Cell Carcinoma of a Lung Mass Without an Urothelial Origin - A Rare Case Report

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### Abstract

A 77-year-old man with smoking history visited Thoracic Surgery department with a complaint of dry cough and dyspnea for months. Chest CT showed a mass over left upper lobe, mediastinal lymph node enlargement and bilateral lung nodules. CT-guide biopsy of the left upper lung mass revealed transitional cell carcinoma. Nevertheless, no primary origin was discovered after a thorough evaluation of genitourinary tract, including abdominal CT, FDG-PET, cystoscopy and retrograde pyelography. We will discuss the possible reasons for the unknown primary origin of transitional cell carcinoma in a lung mass.

**Keywords:** Transitional cell carcinoma; Lung mass; Carcinoma of unknown primary origin

### Introduction

Transitional cell carcinoma is the most common primary neoplasm of the genitourinary tract. Among diagnosed cases of bladder TCC, muscle-invasive disease and metastases represent approximately 30% [1]. The most common sites of distant metastases of TCC include liver, lung, mediastinum, bone and adrenal gland. Nonetheless, metastatic TCC to lung without a genitourinary tract origin is very rare. Among published case reports on PubMed, no such condition was found. We report a case with biopsy proven-TCC of a lung mass without a diagnosed primary origin.

### Case Report

A totally independent 77-year-old man with Hypertension, Diabetes Mellitus and smoking history came to Thoracic Surgery department for help. He had dry cough for months, associated with dyspnea. In addition, he also had an episode of painless gross hematuria three months ago. He denied fever, sputum, hemoptysis and weight loss. Physical examination showed no findings.

All routine hematological and biochemical parameters were normal. Serologic tumor markers (CEA, PSA, CA153, and CA19-9) were within normal limits except elevated CA-125 and SCC. Chest X-ray showed a large mass lesion at left upper lung and multiple bilateral lung nodules. Chest CT showed a mass over left upper lobe, mediastinal lymph node enlargement and bilateral lung nodules (Figure 1). CT-guided biopsy was done for the left upper lung mass. Microscopic findings showed clusters of epithelial nests having hyperchromatic, pleomorphic nuclei and ample cytoplasm (Figure 2). The IHC staining reveals positive

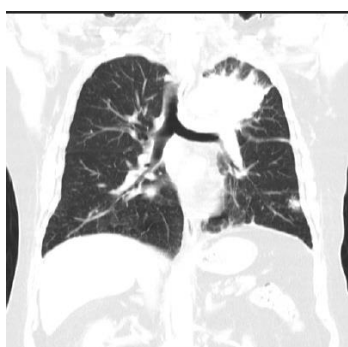


Figure 1: A mass over left upper lobe.

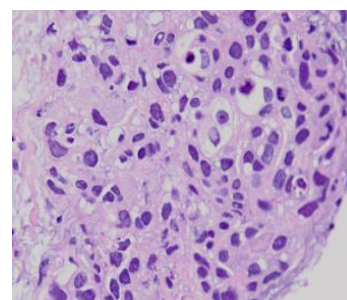


Figure 2: A CT-guide biopsy of the left upper lung mass, 40x, H&E.

results for GATA-3 and CK7; while negative for TTF-1, CDX2, PSA and PAX-8. Positive GATA-3 and CK7 indicated the possibility of both urothelial carcinoma and breast cancer. Considering his clinical evaluation and H&E findings, carcinoma of urothelial origin is most likely. A pathological diagnosis of TCC in lung was made. However, the primary site remained unknown even after a search for a primary tumor using urine cytology, abdominal CT with contrast, FDG-PET/CT, cystoscopy and bilateral retrograde pyelography (with ureteral urine cytology). He was then transferred to oncology department and six cycles of Carboplatin plus Gemcitabine were arranged. He has finished the first cycle and will follow up in oncology department for evaluation of the treatment response.

### Discussion

Our discussion will focus on four possible reasons for the unknown primary origin of lung TCC we hypothesized. The first possible reason we hypothesized would be the misdiagnosed primary GU tract carcinoma. The sensitivity of the diagnostic modalities used in our case is not 100%. Urine cytology has a sensitivity of 21.1% for detecting bladder TCC [2]. Abdominal CT has a sensitivity of 80% for upper urinary tract tumor and

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Received June 23, 2017; Accepted July 07, 2017; Published July 12, 2017

Citation: Liao Y, Huang KH (2017) Biopsy-Proven Transitional Cell Carcinoma of a Lung Mass Without an Urothelial Origin – A Rare Case Report. J Clin Case Rep 7: 989. doi: 10.4172/2165-7920.1000989

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a sensitivity of 60% for bladder tumors [3,4]. Cystoscopy has a sensitivity of 62-84% in white light cystoscopy [5]. Retrograde pyelography has a sensitivity of 72% when being read by urologist in the operation room [6]. In brief, misdiagnosing is possible. The second possible reason is a spontaneously regressed primary cancer. Dr. Melichar reported a case in Poland who simultaneously has psoriasis and metastatic RCC to lung [7] Its lung metastasis spontaneously regressed during the exacerbation of psoriasis, explaining the correlation of increased immunity and the spontaneously regression of the metastatic carcinoma. There were also 5 cases of spontaneously regression of primary RCC from 1971 to 2011 among adults in Poland [7]. proving the possibility of spontaneous regression. The third possible reason is the process transitional cell neometaplasia. Dr. Lininger RA also reported eight cases of primary TCC involving the endometrium, hypothesizing that the endometrial lesions develop through neometaplasia from other neoplastic cell types due to the admixture of TCC with other patterns of carcinoma in the reported cases [8]. We postulated that lung carcinoma may go through similar processes. The last possible reason will be tissue contaminants. After gaining the specimen from surgery or biopsy, it would go through grossing, tissue processing, embedding, cutting and staining. Every step owes a probability of tissue contamination, especially staining. Dr. Platt E conducted an experiment in Cleveland Clinic and stated that the linear H&E stainer contained a total of 696 tissue fragments, resulting in a tissue contamination rate of 25% [9].

## Conclusion

We reported a case of lung TCC with unknown genitourinary

tract origin. Four possible reasons has been hypothesized, including misdiagnosing of primary GU tract carcinoma, spontaneously regression of primary cancer, transitional cell neometaplasia and tissue contamination. Each hypothesis could possibly result in the unknown primary origin.

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