Cystic Pulmonary Metastasis of Bladder Cancer: Report of Two Cases

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Abstract

Two patients, a 63-year-old male and a 45-year-old female, both presenting with pulmonary metastasis of bladder cancer, are reported. The first case had a poorer prognosis due to the presence of endobronchial metastatic lesions in addition to the cavitary-cystic metastatic lesions as opposed to the second patient who had bilateral metastatic cavitary-cystic lesions only.

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Key words: *bladder cancer, pulmonary metastasis*

Introduction

Bladder cancer is the second most common cancer among urogenital system tumors and is 2.7 times more common in males than females. The average age at the time of diagnosis is 65 years (1). Risk factors are cigarette smoking, exposure to industrial dyes and solvents, schiostosomiasis infections, bladder stones and chronic catheter usage. In the last few years, cigarette smoking and industrial dyes are reported to have a role in 60% and 15% of the cases, respectively (1).

The metastasis of bladder cancer is seen in the regional lymph nodes in the liver, lung, kidneys and bone. Pulmonary metastasis are reported in approximately 45% of the cases (2). The prognosis is poor in patients with metastasis (1). Pulmonary metastasis present either as cystic parenchymal lung disease or as endobronchial mass lesions. It is not common to observe both cystic and endobronchial metastasis at the same time in the same patient. This was the reason which led us to present two such patients.

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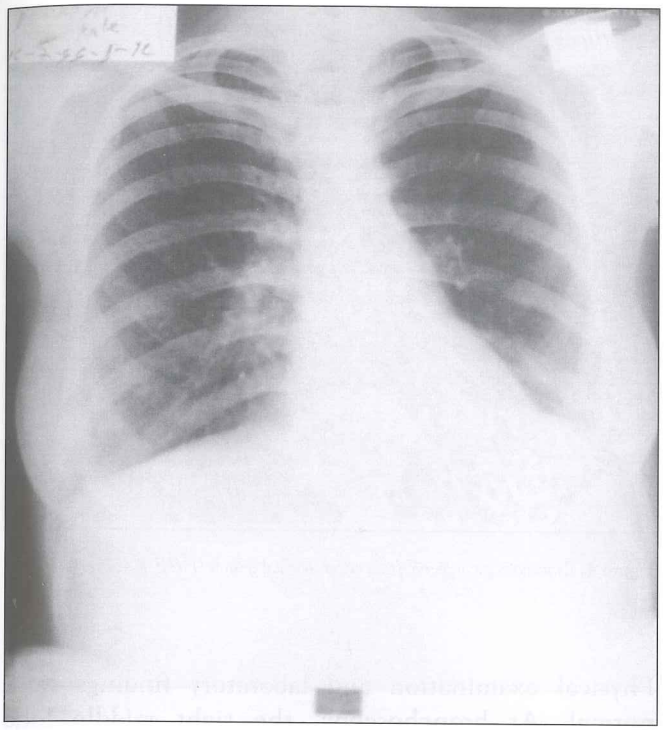

Figure 1. *Chest x-ray (1999)*

Case 1

A 63-year-old male patient, born in a province on the Black Sea coast of Turkey and who was a retired factory worker, was admitted to our outpatient clinic with complaints of productive sputum, hemoptysis and frequent upper respiratory infections. His postero-anterior chest X-ray revealed multiple cavitary-cystic lesions and he was admitted to our clinic in April 2001 for further investigation. He had eight pack-year of smoking and he had been an ex-smoker for the past eight years. He had undergone transurethral resection three times in 1993, 1994 and 1995 with the diagnosis of bladder cancer (transitional epithelial cell type) and in 1996 he had radical cystectomy and left nephroureterectomy with the same diagnosis. Chemotherapy had been refused by the patient.

He had been hospitalized with respiratory symptoms in August 1999 was found to have cystic lesions on his chest X-ray. He was suggested further investigation at that time, but he had refused so he was given symptomatic treatment (Figure 1).

On his physical examination, the patient was conscious, alert and cooperative. Blood pressure was 130/85 mmHg, pulse was 84 beats/min. and rhythmic, fever was 36.6° axillary, respiratory rate was 16/min. The respiratory system and other system examinations were normal. Laboratory findings, except for urea level of 113 mg/dL and a creatinine level of 2.8 mg/dL, were normal. Postero-anterior and lateral chest X-ray revealed bilateral multiple cystic lesions (Figure 2a-b). Thoracic computerized tomography revealed bilateral, multiple cystic lesions, 5x5x4 cm in the greatest dimension (Figure 3). Respiratory function tests were normal. Bronchoscopy revealed a vegetating mass was seen in right middle lobe posteromedially. Pathology of the bronchoscopic material and sputum showed carcinoma cells which were compatible with a diagnosiss of transitional cell carcinoma (Figure 4,5). The patient was referred to the oncology department for systemic chemotherapy with the

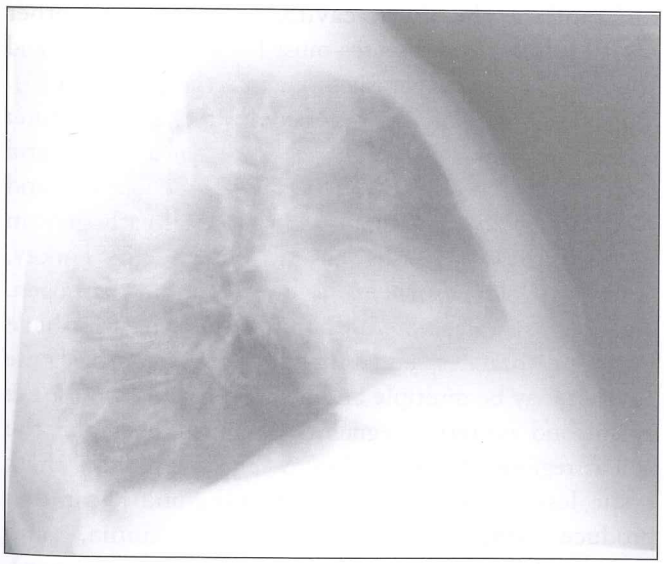

Figure 2a. *Lateral chest X-ray (2001)*

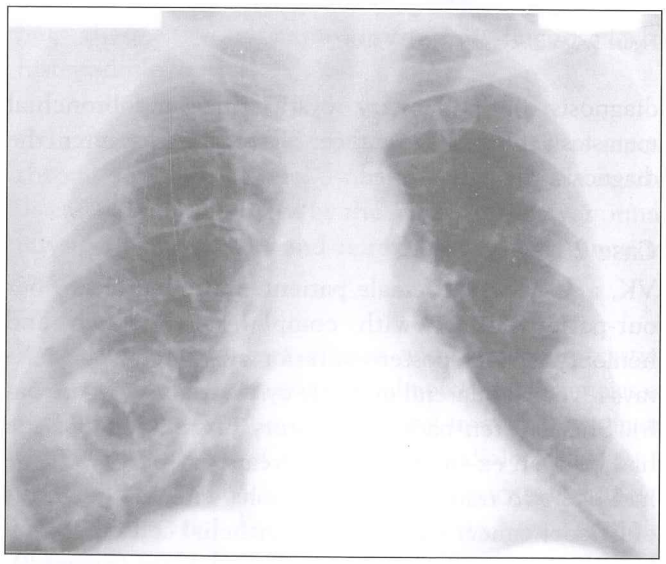

Figure 2b. *Postero-anterior chest X-ray (2001)*

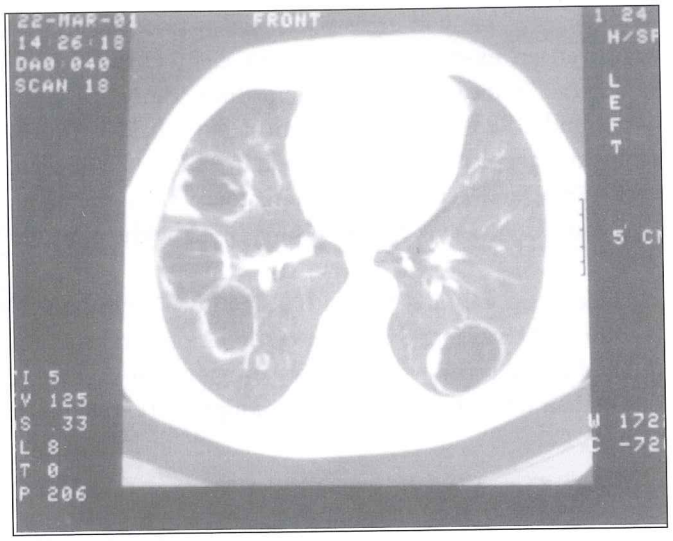

Figure 3. *Thorax computerized tomography (2001)*

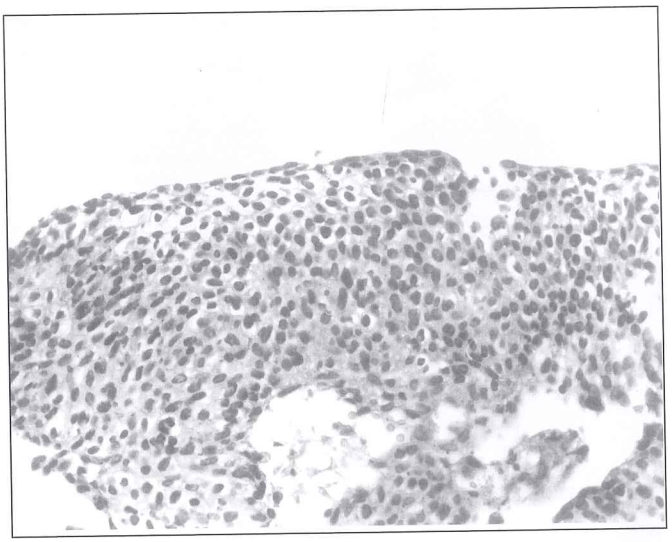

Figure 4. *Bronchoscopic material from endobronchial lession (H&E X 400).*

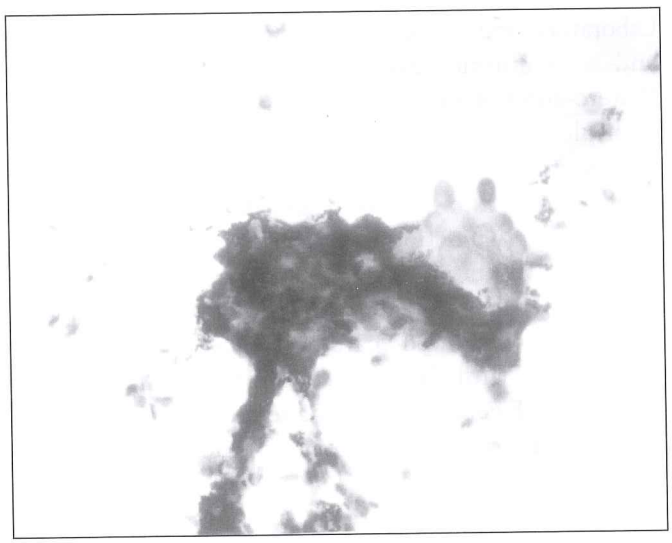

Figure 5. *Sputum cytology (H&E X 400).*

diagnosis of pulmonary cystic and endobronchial metastasis of bladder cancer. Two months after the diagnosis, the patient died.

Case 2

VK, a 45-year-old female patient, was admitted to our out-patient clinic with complaints of cough and hemoptysis. Her postero-anterior and lateral chest X-rays revealed bilateral multiple cystic lesions (Figure 6a-b). She had ten pack-year history of smoking and she had been an ex-smoker for two years. In June 1997, she had had two transurethal resections with the diagnosis of bladder cancer (transitional epithelial cell type). She had chemotherapy and a normal chest X-ray (Figure 7). Her thoracic computerized tomography revealed bilateral multiple cavitary-cystic lesions (Figure 8). Physical examination and laboratory findings were normal. At bronchoscopy, the right middle lobe superior segment showed minimal bleeding and an edematous mucosa (Figure 9). Pathological examination of the bronchoscopic material was not diagnostic. TTNAB (transthorocic needle aspiration biopsy) was performed and it revealed malignant epithelial tumoral cells which were identical to the transitional bladder cancer cells.

Discussion

Urogenital malignancies commonly metastasize to the lung. Pulmonary metastasis present with masses or with nodular, cystic-cavitary lesions. Patients histories, physical examination, laboratory tests can help to differantiate the cystic-cavitary lesions from other entities. Infectious diseases must be addressed first; and bacteria, fungi and parasities may be the pathogen (3). *Staphylococcus aureus*, *Klebsiella-Enterobacter-Serratia species*, *P. aeuroginosa*, *E. coli*, *S. pneumoniae* and anaerobic organisms, *Mycobacteria*, *Actinomyces* and *Nocardia* are the most important bacterial pathogens in cystic-cavitary diseases of the lung. In Turkey, *Mycobacterium tuberculosis* is an important pathogen. Tuberculosis associated cystic-cavitary lesions have moderate thickness and inner lining is smooth. These cavities may be multiple and have a predilection for the apical and posterior segments of upper lobes and the apical regions of lower lobes. *S. aureus* produces thick cystic lesions with ragged inner lining and it can also produce empyema or bronchopneumonia, and occasionally pneumotocele (particularly in children). Among fungal pathogens leading to cystic-cavitary lesions, *Pneumocystitis carinii*, *H. capsulatum*, *C. immitis*,

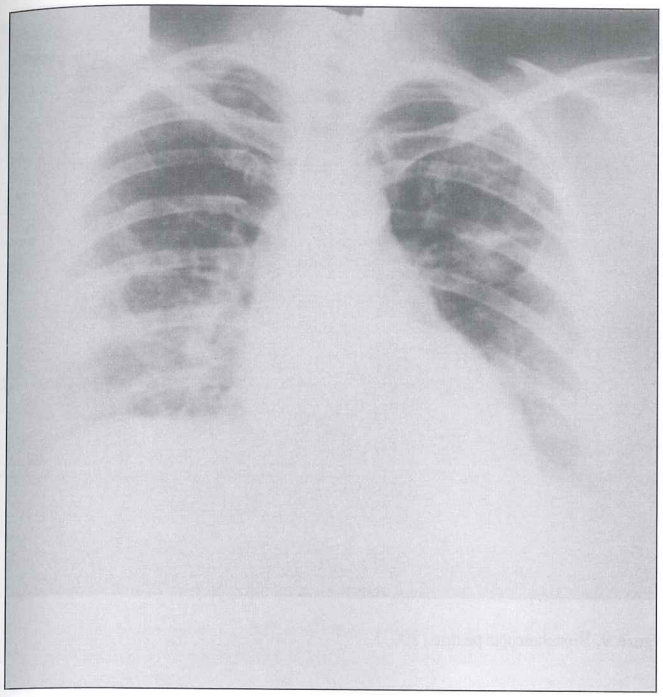

Figure 6a. *Postero-anterior chest X-ray (2001)*

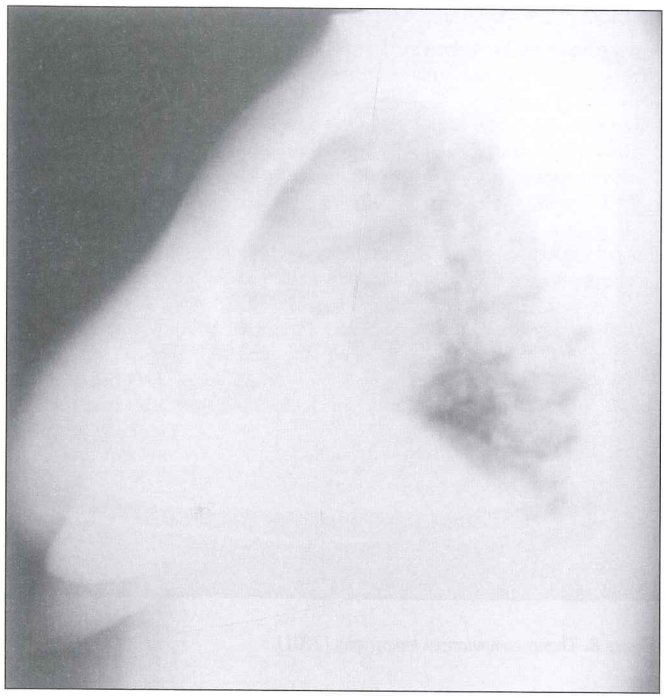

Figure 6b. *Lateral chest X-ray (2001)*

B. dermatitis, *C. neoformans* and *Aspergillus species* are the leading organisms. These pathogens can be suspected in immunocompromised patients. *Paragominus westermani*, *E. granulosus* are the most common parasites producing cystic-cavitary lesion. Among infectious diseases of bacterial, fungal and parasitic origin, the second important pathogen for Turkey is *E. granulosus*. It has an anatomic predilection for lower lobes and additional radiographical signs such as the water-lily sign or sign of the camalote. In our patient, there were no laboratory or clinical clues for an infectious etiology.

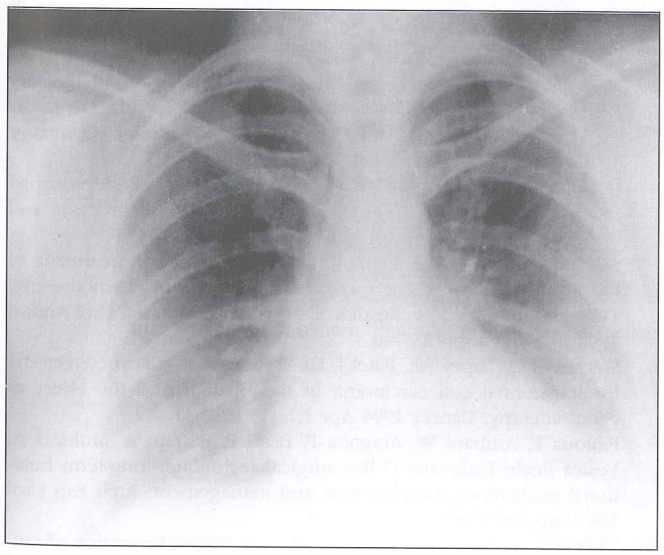

Figure 7. *Chest X-ray (1997)*

The sputum specimen including acid fast bacilli for M. *tuberculosis* and other pathogens, bronchoscopic material culture were sterile.

Wegener's granulomatosis and sarcoidosis are also immunological diseases that present with cystic-cavitary lesions. Wegener's granulomatosis usually presents with bilateral and widely distrubuted cystic-cavitary lesions. Our patient had negative c-ANCA and negative p-ANCA, normal Waters' graphy and normal ENT examination. Sarcoidosis has upper lobe predilection, but these two diseases must be diagnosed by histopathologically.

Other pulmonary cystic-cavitary lesions such as septic thromboembolism, airway diseases and traumatic diseases can be excluded by the patients history, normal physical examination and normal respiratory function tests.

Neoplastic diseases that present with pulmonary cystic-cavitary lesions may be primary pulmonary malignancies or hematogenous metastasis to the lung from other primary organ malignancies. Clinically and radiologically, it is impossible to differentiate primary pulmonary malignancies from metastatic diseases (3,4). The hematogenous metastases to the lung from other organ malignancies have generally either a thick or thin wall and do not have a predilection for a specific anatomical localization. Also

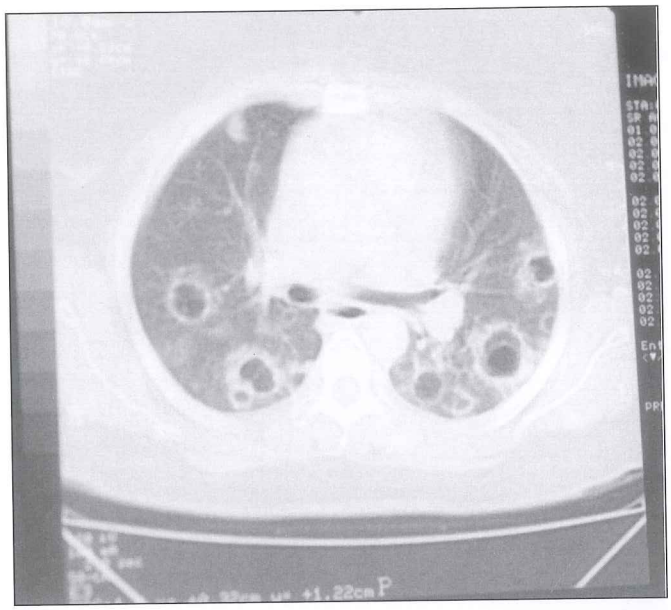

Figure 8. *Thorax computarized tomography (2001)*

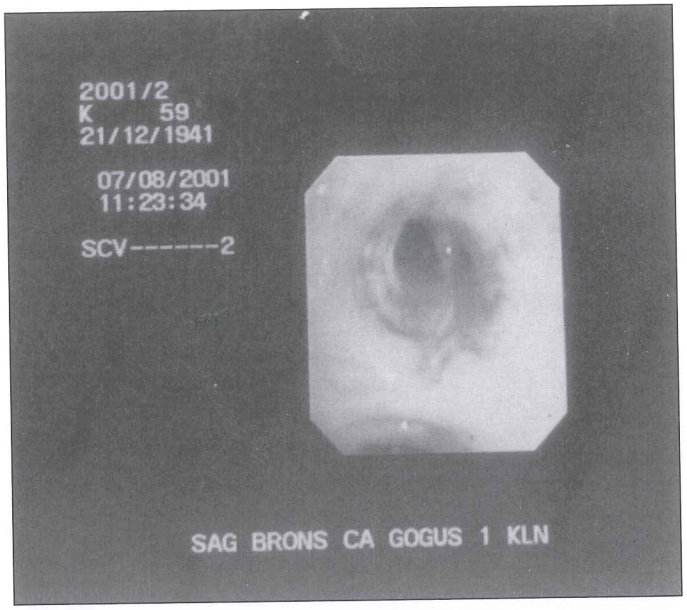

Figure 9. *Bronchoscopic picture (2001)*

these metastasis can be variable in dimension and in number (3). Our patients had radiological features that supported these properties. We compared the old and new radiological features of the patients and we observed that the cystic-cavitary lesions had also increased in size and in number over time. Our patients were diagnosed pathologically as metastatic bladder cancer by bronchoscopic examination and TTNAB.

Surgery, chemotherapy and radiotherapy are treatment modalities in bladder cancer. For the primary site, TUR (transurethral resection) (5), radical cystectomy (6), VIP pouch (complete bladder replacement using ileal segment) (7) can be used. For the pulmonary nodular metastasis, surgical resection of pulmonary metastasis may be effective, provided the indication is assessed carefully (8). For the locally advanced disease, neoadjuvant systemic chemotherapy and later radiotherapy or surgery can be performed (5,9). The patients with high risk for recurrence, postoperative systemic chemotherapy must be kept in mind (10). Systemic M-VAC (9,11,12), CMV (5), mitomycin C+lonidomine (13), and IL-2 (14,15) are examples of selected systemic chemotherapeutical protocols. Treatment approaches generally vary from patient to patient.

An article in German by Werner et al. (10) demonstrated that pulmonary metastasis occurred with Grade 2-3 tumor progression. Pulmonary metastasis should be searched for in these patients.

In bladder cancer cases, endobronchial lesions are rare (2). In some series it was reported that the median survival was about 41 months after the diagnosis of the primary tumor (2,4,16,17). In other series the median survival was reported as 9 months and that was much shorter in endobronchial lesions (18). As we observed in case 1 with endobronchial and cavitary metastasis, the prognosis was poorer than in case 2 who presented with cavitary metastases.

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İstanbul in winter. Photography by Turgay Çelikel, MD, PhD