Cavitatory Pulmonary Metastasis in Superficial Transitional Cell Carcinoma of Urinary Bladder

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ABSTRACT

Introduction: superficial bladder cancers represent 70-75% of all bladder malignancies. The frequency of metastatic cavitation tumours in lung are 2-5%. **Case Presentation:** We present a 65 years elderly gentleman a treated case of superficial bladder cancer who presented after sixteen months of follow up with cough and haemoptysis. Sputum was positive for malignant cells on cytology. CT guided biopsy of the lung lesions showed transitional cell carcinomatous deposits. He was started on gemcitabine and cisplatin based chemotherapy. After six cycles a repeat CT scan showed complete resolution of lesions **Conclusion:** In this case, we observed superficial transitional cell carcinoma bladder with well-defined cavitatory lesions which were transitional cell carcinoma on biopsy. After initiation of cisplatinum based chemotherapy, patient showed complete resolution of metastatic lesions emphasizing role of multi-agent chemotherapy in metastatic disease. This case highlights the role of adjuvant chemotherapy in superficial urinary bladder cancer with lung metastasis leading to complete resolution of the lesions, thereby emphasizing role of phase specific chemotherapy in high fraction tumours. Cisplatinum has been approved as first line agent in urinary bladder carcinoma along with gemcitabine and has shown commendable results in improving overall survival and quality of life. In this case it has outdone itself in a metastatic setting with extensive lung metastasis and has shown that even metastatic settings should be given a trial of cisplatinum based chemotherapy irrespective of the widespread nature of the disease.

Key Words: Cavitatory lung metastasis,Cisplatinum based chemotherapy, superficial urinary bladder cancer

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INTRODUCTION: Urinary bladder cancer is the second most common cancer among urogenital tumours and is 2.7 times more common in males than females. The average

age at the time of diagnosis is 65 years. Risk factors include cigarette smoking, exposure to industrial dyes and solvents, schistosomiasis infection, bladder stones and chronic catheter usage. [1] Superficial bladder cancers constitute 70-75% of all urinary bladder malignancies. They have a variable potential for recurrence, they may progress to a local stage or develop epithelial spread and dispersal of transformed cells leading to progression to muscle infiltration and subsequent metastasis. [2] Distant metastasis typically does not occur in the absence of penetration of the deep muscular layer of the bladder by tumour. Dodd and Boyle, in a series of 574 cases of malignant tumours of the lung, reported that cavitation was encountered in only 4% of pulmonary metastases. [3] Neoplastic diseases that present with pulmonary cystic cavitary lesions may be primary pulmonary malignancies or metastasis arising from other primary sites

CASE REPORT: A 65 years old gentleman, diagnosed case of superficial Urinary Bladder cancer presented to us with complaints of haematuria for last 3 months.

Cystoscopy revealed a growth in the base of Urinary bladder extending to prostatic urethra. Transurethral resection of bladder tumour (TURBT) along with excision of prostatic urethra was done. Histopathology revealed low grade lamina invasive transitional cell carcinoma urinary bladder with extension prostatic urethra, no muscle invasion was seen. Thereafter he was followed by cystoprostatectomy and pelvic lymphadenectomy. Resected specimen did not show the involvement of prostate. All surgical margins and nodes resected were free of tumour. Patient was advised regular follow up.

After 16 months he presented with complaints of cough and haemoptysis for three months. On examination, bilateral scattered crepitations were present. Pulmonary function test showed restrictive pattern. On sputum microscopy was negative for acid fast bacilli but malignant cytology was positive. Contrast enhanced CT (CECT) chest showed bilateral multiple cavitatory lesions in lungs (Figure 1). CT guided biopsy of the lung lesion was taken which showed metastatic transitional cell carcinomatous deposits compatible with the primary of urinary bladder (Figure 2). Along with this the previous slides and blocks of cystoprostatectomy specimen were also reviewed which revealed that it was a non-

muscle invasive high grade transitional cell carcinoma (Figure 3).

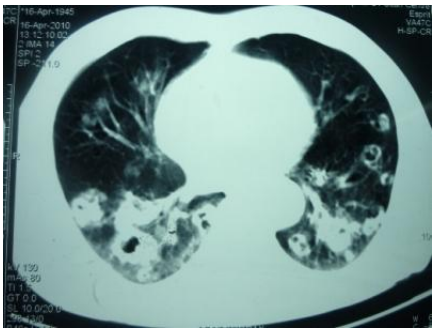

Fig 1: CECT chest showing multiple cavitatory lung metastases before chemotherapy

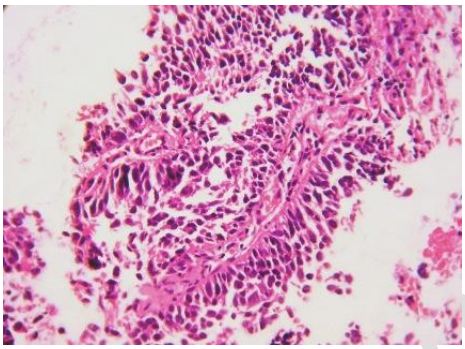

Figure 2: Lung metastasis of papillary transitional cell carcinoma.

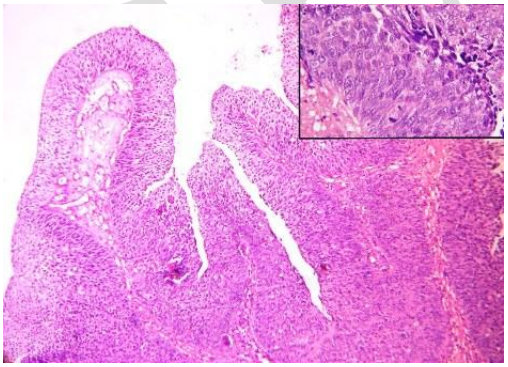

Figure 3: High grade transitional cell carcinoma.

Patient was started on chemotherapy with gemcitabine and cisplatinum. [4] Patient completed six cycles at regular three weekly intervals and tolerated the chemotherapy well without any toxicity related delays. Repeat CECT chest showed complete resolution of the lung lesion (Figure 4). Patient was kept on regular follow up. Last follow up was May 2013 patient was disease free. Overall survival being 24 months.

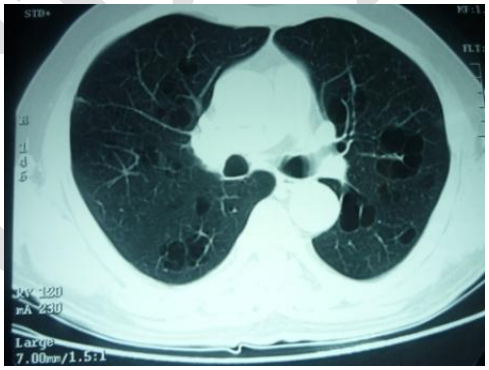

Figure 4: CECT chest showing post chemotherapy complete resolution of lung mestastasis

DISCUSSION: Neoplastic diseases that present with pulmonary cystic cavitary lesions may be primary pulmonary malignancies or metastasis arising from other primary sites. Various possible mechanisms for the development of malignant cysts described are (a) excavation of a nodular tumour through discharge of the necrotic material inside, (b) infiltration of malignant cells into the walls of a pre-

existing benign pulmonary bulla, and (c) infiltration of malignant cells into the walls of air sacs formed by cystic distension of small airways through the ball-valve effect of the tumour.[5] The first and second mechanism appeared unlikely in case under reference because the consistent increase in the number of pulmonary cysts could hardly be explained by a progressive emphysematous change in the lungs of this never smoking man. The likelihood of the third mechanism is ruled out as there were no existing cavities reported in the lung biopsy. We hypothesized a fourth possible mechanism in this case in which a tumour with high proliferative index, could outgrow the nutritive supply of that particular area leading to central necrosis.

The diagnosis of multiple pulmonary cavitating lesions includes bacterial, fungal, parasitic infections and immunologic disorders such as Wegener's granulomatosis or rheumatoid necrobiotic nodules. [6] Other pulmonary cystic-cavitary lesions such as septic thromboembolism, airway diseases and traumatic diseases can be excluded by the patient's history, normal physical examination and normal respiratory tests. In our patient since he was already a case of carcinoma bladder we tried only one course of antibiotics and immediately went ahead with biopsy of the lesions, which came out as positive for metastatic carcinomatous deposits. And therefore patient was planned further for chemotherapy.

In terms of treatment, surgery, chemotherapy and radiotherapy are routinely used treatment modalities in bladder cancer. For the primary site, TUR (transurethral resection), radical cystectomy, VIP pouch (complete bladder replacement using ileal segment) can be judiciously used.[7] 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, neo-adjuvant systemic chemotherapy followed by radiotherapy or surgery is usually performed. Presuming our hypothesis as the cause of cavitation, a combination of chemotherapeutic drugs, Gemcitabine, a phase specific drug and cisplatinum, a cycle specific drug were used. [9] The desired results were achieved with the patient being disease-free for ten months after the completion of the entire treatment.

Two most striking features of this case report were the infrequent metastatic pattern and second feature was that the complete resolution of the lung metastasis

with gemcitabine and cisplatinum combination chemotherapy. Cisplatinum has been approved as first line agent in urinary bladder carcinoma along with gemcitabine and has shown encouraging results in terms of overall survival. In this case, it resulted in complete resolution of the lung lesions and improved the quality of life of the concerned patient.

CONCLUSION: In summary, we present a case of multiple cavitatory pulmonary metastases from transitional cell carcinoma of urinary bladder. Cavitatory metastases are considered as an uncommon manifestation of pulmonary involvement by metastatic non-muscle invasive transitional cell carcinoma bladder. The role of multi-agent chemotherapy with Gemcitabine and Cisplatinum is emphasized here as a salvage chemotherapy, which resulted in complete resolution of metastatic lesions. This suggests that a trial of cisplatinum based, phase - specific chemotherapy can achieve partial to complete responses in advanced diseases also and should be used in patients with metastatic disease.

CONSENT: The patient described in the case report has given their informed consent for the case report to be published.

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