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Case report

Tumor lysis without syndrome in adenocarcinoma of the lung: Case report

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ABSTRACT

Tumor lysis syndrome TLS is commonly seen during the treatment of rapidly proliferating. However TLS is rarely reported in Non-small cell Lung Cancer. This may because of low proliferative rate and chemo-resistant nature of NSCLC. We are reporting a case of tumor lysis without concomitant syndrome in a patient with adenocarcinoma of Lung.

1. Introduction

Tumor lysis syndrome (TLS) is a well-recognized fatal complication seen during the treatment of the rapidly proliferating and chemo-sensitive tumors such as lymphomas and leukemias [1,2], but rarely seen with solid tumor like lung cancer. Tumor lysis syndrome complicating chemotherapy for non-small cell lung cancer is very rare and to date there have been only four such cases that have been reported in literature [10–13].

2. Case report

A 59-year old African American male former heavy smoker (40 pack years) with no significant past medical history presented to our hospital with non-productive cough and shortness of breath on exertion of three months duration. He did not report any history of hemoptysis, weight lost, night sweats or fever. His vitals were stable and thorough physical examination did not reveal any abnormal findings. Chest X-ray (Fig. 1) revealed collapse of the right upper lobe (RUL). CT scan of the chest (Fig. 2A and B) showed a $4 \times 3.7 \times 4$ cm^3 mass with areas of calcification abutting and compressing the right upper lobe bronchus with atelectasis of the RUL. Flexible bronchoscopy revealed an endobronchial lesion which completely occluded the right upper lobe bronchus and partially occluded the bronchus intermedius. Endobronchial biopsy and brushing taken from the mass was positive for a poorly differentiated primary lung adenocarcinoma that stained positive for AE1/AE3, CK 7, TTF1, CD45 and Napsin A. Test for EGFR mutation was negative but tests for p53 and Ki-67 were positive. His hospital stay was complicated by development of focal seizure and weakness involving the right upper extremity. Magnetic resonance imaging (MRI) of brain revealed multiple ring enhancing lesions consistent with brain metastasis. Positron emission tomography showed increased uptake in right upper lobe and right hilar lymph node but no evidence of metastasis elsewhere. He received 6 cycles of combination chemotherapy consisting of carboplatin, paclitaxel and bevacizumab; whole brain radiation was given for his brain metastasis. Repeat CXR (Fig. 3) and CT scan (Fig. 4) after three months of initiation of chemotherapy showed re-expansion of the right upper lobe and replacement of the mass with large air filled cystic space that communicated with right main stem bronchus and bronchus intermedius. Repeat laboratory investigation revealed WBC of 14,500 cell/μl, serum creatinine of 0.9 mg/dL, serum potassium of 4.1 mEq/dL, serum calcium of 9.8 mg/dl, serum phosphate 4 mEq/dL, serum uric acid level of 5.4 mg/dl (normal

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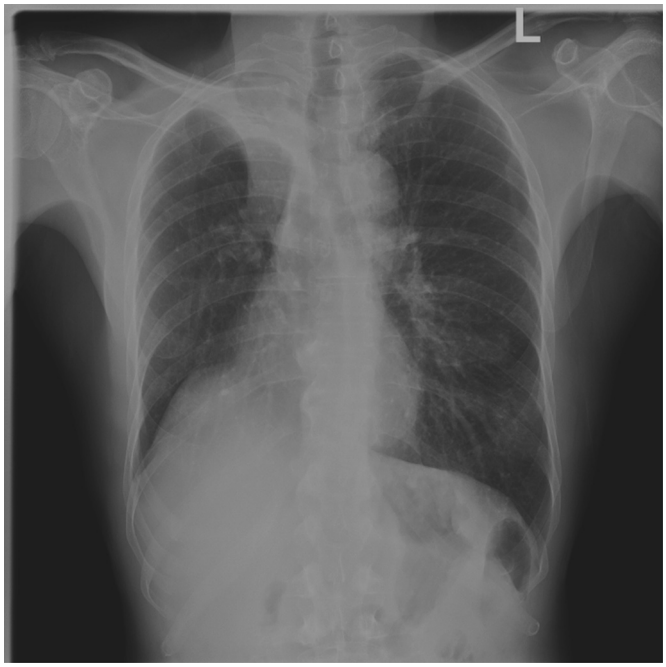

Fig. 1. CXR: Frontal view showing RUL collapse (s sign of gold).

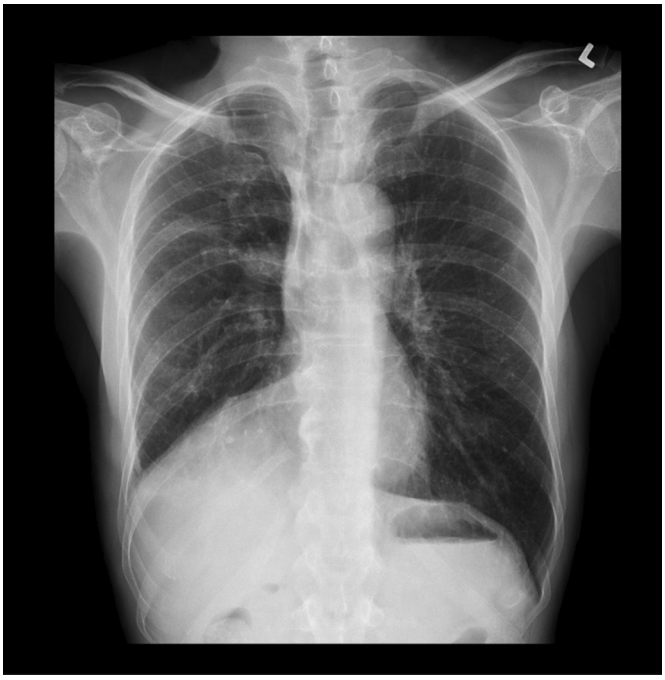

Fig. 3. CXR Re-expansion of the RUL.

range 3.5–7.2 mg/Dl) and serum LDH level of 187 IU/L (71–200 IU/L). This was consistent with complete lysis of the lung tumor without the metabolic derangements of tumor lysis syndrome. He was initially maintained on bevacizumab but later switched to erlotinib (EGFR inhibitor) due to hemoptysis. Most recent CT scan after 18 months of chemotherapy (Fig. 5) showed a further decrease in the size of the cystic lesion. Except for recurrent seizures he continues to do well after almost 30 months of his diagnosis with metastatic lung cancer.

3. Discussion

Tumor lysis syndrome results from lysis of the rapidly proliferating malignant cells after the administration of cytotoxic chemotherapy. The release of the cellular contents result in metabolic derangements such as hyper-uricemia, hyperkalemia, elevated LDH levels, hyperphosphatemia, acute renal failure and hypocalcaemia that characterize tumor lysis syndrome [2].

TLS commonly occurs with hematological malignancies but is rare with solid tumors due to relatively low proliferative index and marginal response to chemotherapy. Solid tumors that are known to cause TLS include breast carcinoma [3], medullo-blastoma [4], ovarian cancer [5], rhabdomyosarcoma [6] and neuro-blastoma [7]. Typically these tumors are bulky with multiple metastatic foci and generally are sensitive to initial chemotherapy. TLS rarely occurs with small cell lung cancer [7–9] which is more chemo-sensitive, but occurrence of TLS with NSCLC is extremely rare. This may be due to low proliferative rate and chemo-resistance of NSCLC. There have been only four case reports of TLS with NSCLC, and one of them died of acute spontaneous tumor lysis syndrome without chemotherapy.

Stage IV NSCLC is associated with poor prognosis. In patients with good performance status chemotherapy improves survival by only 4 months with 1-year survival of 10–20% and 5-year survival of <5% [14]. Additionally expression of biomarker ki-67 in tumor like our patient is associated with poor outcome [15].

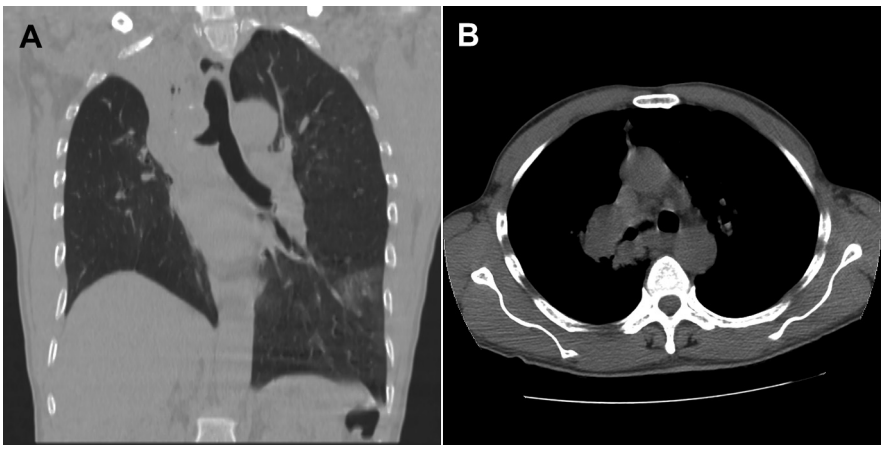

Fig. 2. CT chest. 2A (left) coronal section 2B (cross-sectional image) of the chest showing RUL mass abutting right upper lobe bronchus and right main stem causing right upper lobe collapse.

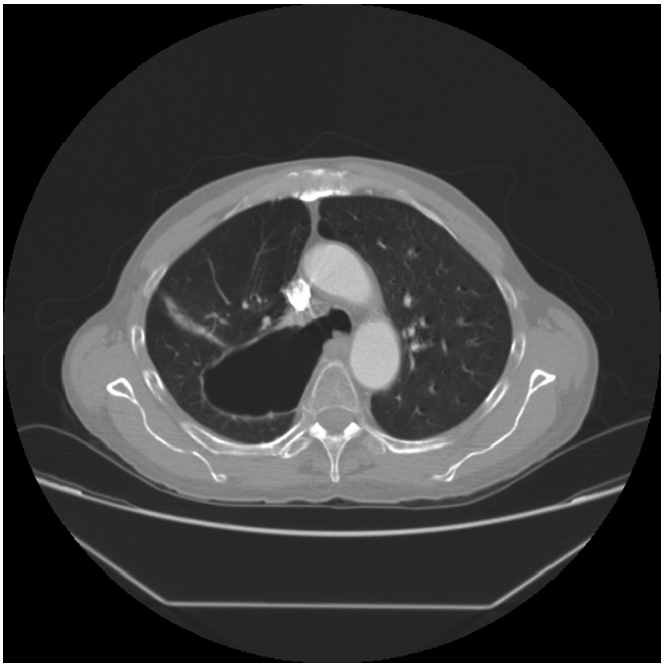

Fig. 4. CT chest showing large air filled cyst communicating with right main stem bronchus.

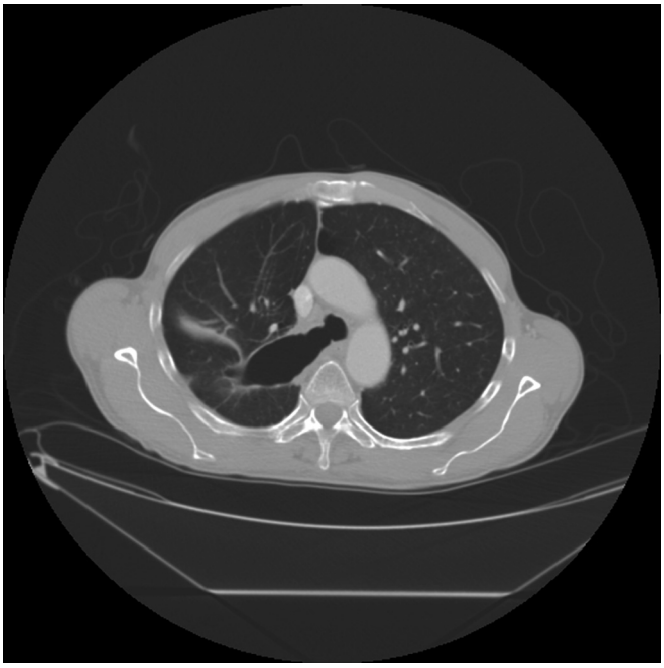

Fig. 5. CT chest: Cyst is smaller in size.

In this case report we describe a unique case of lung cancer with complete lysis of the tumor resulting from chemotherapy leaving a large cystic lesion in the lung. He did not have metabolic derangements to suggest TLS. The possible explanation for the absence of TLS despite complete lysis of the tumor is that the size of the tumor was not large and bulky enough to cause the syndrome. However it is still possible that he might have had milder form of the TLS which was missed due to absence of symptoms. To our knowledge, this is the first case of lung cancer with complete lysis of the tumor without tumor lysis syndrome.

Disclosures

The study was performed at Jacobi Medical Center.
This manuscript is not under consideration in any other journal.
The authors declare that there was no funding for this study.
All authors have read the manuscript and agree to the content.

Conflict of interest

None.

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