**Case Report**

**Lungs : Victim of Synchronous Double Malignancies**

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**Abstract**

A 20 year young man was referred to our institution with superior vena cava (SVC) syndrome, multiple lung opacities and a mass lesion in the right upper zone (RUZ). CT-guided FNAC from the mass lesion was consistent with the diagnosis of non-small cell lung carcinoma (NSCLC). A lump in his left testis was detected during clinical examination. Both FNAC and excisional biopsy of the testicular mass confirmed the diagnosis of immature teratoma with choriocarcinoma, a form of non-seminomatous germ cell tumour (NSGCT). With chemotherapy all metastatic lesions of lung and SVC syndrome disappeared, and the tumour-marker levels decreased. However, the opacity in RUZ progressed to involve right recurrent laryngeal nerve at thoracic inlet, metastasized to the brain, and the patient expired after 4th cycle of chemotherapy. This case of synchronous double primary malignancies (SDPM) is being reported for its rarity.

**INTRODUCTION**

With the advance of medical science and the multi-modality treatment approach, long-term survival of patients suffering from malignant diseases has been dramatically improved. At the same time, second neoplasm was found to be emerging as a long-term complication of treatment with radiotherapy, chemotherapy and even with autologous stem cell transplantation. Subsequently second neoplasms were classified as ‘synchronous’, defined as occurrence of the index tumor and second malignancy within 6 month of each other, and ‘metachronous’, defined as occurrence of the index tumor and the second malignancy separated by a period of more than 7 months. Eighteen synchronous, 90 metachronous, 11 triple neoplasms and even 2 quadruple malignancies of head and neck were reported in a large clinical case review from Japan. We present here a unique case of SDPM involving lungs and testis.

**CASE REPORT**

A 20 year old man, addicted to smoking (5 biri/day for last 2 years) was referred to our institution with right-sided persisting dull aching chest pain of moderate severity and cough with mild blood-streak expectoration for last two and half months. He developed gradual swelling of face and respiratory distress with day-to-day activities for last one month. He did not have fever, weight loss, stridor, dysphagia, syncope or past history of tuberculosis.

Physical examination revealed respiratory rate 30/min with hyperactive accessory respiratory muscles; jugular veins were distended but non-pulsatile in nature and prominent veins were seen over chest wall with the venous flow from above downwards. Examination of the respiratory system revealed dullness over right infra-clavicular area with diminished breath sound over the area; trachea was slightly shifted to the right and apical impulse was palpable in normal position. Breath sound and other findings over other parts of lungs were normal. A left testicular swelling was detected about the size of a tennis ball with testicular pain sensation intact. On enquiry it was revealed that the testicular swelling was present for last 2 years following trauma, with a diagnosis of hematocele. Examination of other systems was essentially normal.

Investigations revealed Hb - 11gm%; Total WBC count -6600/mm³ with N76, L16, M5, E3; ESR - 75 mm and total Platelet 2,10,000/mm³. His X-ray chest (PA view) showed a round homogenous opacity in RUZ covering more than 1/3rd of right hemithorax with multiple round opacities varied from nodules to cannon ball size over both lung fields. Sputum was negative for both AFB and malignant cell. CT-scan of thorax revealed a large well-defined non-homogeneous, enhancing mass lesion in the right upper lobe compressing right main bronchus as well as bilateral pulmonary deposits (Fig. 1). CT-guided FNAC from RUZ mass showed discrete and clusters of medium sized to large, atypical cells containing round to oval pleomorphic, hyperchromatic nuclei with nucleoli having coarse chromatin in a hemorrhagic background (Fig. 2) suggestive of NSCLC.

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USG of abdomen was normal. USG of testes showed a large mass with heterogenic ecogenicity in the left testis and the right testis revealed to be normal. FNAC from left testicular mass showed occasional loose clusters of atypical large hyperchromatic slightly pleomorphic cells along with abundant necrosed material suggestive of NSGCT. Alfa fetoprotein (AFP) level was > 1000 IU/ml (normal level is upto 10 IU/ml) and beta-human chorionic gonadotrophin (b-hCG) level was > 10,000 mIU/ml (normal level in male is less than 10 mIU/ml).

Inguinal orchiectomy was done. Histopathological examination revealed mucinous glands, cartilage (both mature and immature), immature mesenchymal stroma, necrosis, hemorrhage along with foci of atypical syncytiotrophoblastic giant cells (Fig. 3), which were

**Fig. 1**: CT-scan of thorax at two different planes showing right upper zone mass along with multiple lung nodules.

**Fig. 2**: Microphotograph depicting the cytology of the lung mass showing clusters of medium sized to large atypical cells containing round to oval, pleomorphic, hyperchromatic nuclei with coarse chromatin in a hemorrhagic background (Leishman-Giemsa, X 400).

**Fig. 3**: Microphotograph showing the histology of the left testicular mass: immature mesenchymal stroma along with atypical syncytiotrophoblastic giant cells and hemorrhage (H and E, X 100).

**Fig. 4**: Follow up X-ray chest (PA-view) showing disappearance of all metastatic lesions with unaltered right upper zone mass.
positive for b-hCG by immunohistochemistry. The findings were consistent with the diagnosis of mixed germ cell tumour (GCT; immature teratoma with choriocarcinoma).

Patient revealed chemotherapy with etoposide (E) - 100 mg and cyosplatin (P) - 30 mg IV daily on days 1 through 5, and 4 cycles of chemotherapy were given at 3 weeks interval. After 1st cycle, both SVC syndrome and dyspnea regressed completely. After 2nd cycle, all metastatic lesions disappeared but the opacity in RUZ did not change significantly (Fig. 4). However the patient developed hoarseness of voice, and the laryngoscopic examination revealed right vocal cord paralysis. After 3rd cycle, level of AFP came down to 109.5 IU/ml. After 4th cycle, patient developed severe headache with vomiting. CT-scan of brain showed two mixed density non-homogenously enhanced space occupying lesions with lobulated outline in the right fronto-parietal and parieto-occipital areas with peri-lesional edema. In spite of cranial irradiation the patient expired.

**DISCUSSION**

GCTs of the testis, arising by the malignant transformation of primordial germ cells, constitute 95% of all testicular neoplasm, and are classified into seminoma and NSGCT. NSGCT are divided into embryonal carcinoma, teratoma, choricarcinoma and endodermal sinus tumour. NSGCT are more frequent in the third decade of life and they tend to metastasize early to the retroperitoneal lymph nodes and lung parenchyma. Metastatic GCTs are classified by International Germ Cell Cancer Consensus Group (IGCCCG) into good, intermediate and poor risk group; factors included in this prognostic factor-based staging are primary site, non-pulmonary visceral metastasis and levels of tumor markers. It was reported that 56%, 28% and 16% of NSGCTs were of good, intermediate and poor risk group respectively. We classified our case as intermediate IGCCCG risk group. In patients with metastatic GCTs of the thorax, chemotherapy consisting of EP with or without bleomycin, is the mainstay of treatment. Five year progression-free survival and overall survival of poor risk GCTs were 81% and 85% respectively. The analysis of clinical factors predicting survival revealed that the presence of pulmonary metastasis carried no significant negative prognostic impact. Our patient achieved remission with complete clinical and radiological disappearance of metastatic lesions along with decreased level of tumor-markers.

Hoarseness of voice is an initial complain in 5-18% of cases of NSCLC. Involvement of right recurrent laryngeal nerve is rare and it indicates tumour in right thoracic inlet since the nerve loops around the right subclavian artery in the root of the neck. Lung cancer is by far the most common cause of brain metastasis, and are usually multiple; the prevalence is 10% at presentation and 50-60% at autopsy. In our case, decreased level of tumour-marker after chemotherapy proved that both right vocal cord palsy and brain metastasis had developed from NSCLC, and not from NSGCT.

Synchronous NSCLC occurs in only 0.5% of cases of multiple primary lung cancers and are difficult to distinguish from metastatic diseases, especially the satellite metastases. In our case, the presence of synchronous primary NSCLC was proved by FNAC from RUZ mass with classical clinical picture showing fall and rise phenomena (NSGCT was regressing along with metastasis while NSCLC was spreading and metastasizing).

Lungs as a victim of double malignancies by metastasis from NSGCT of testis and a synchronous primary NSCLC has not been reported in any literature so far. This makes the case unique for publication.

**REFERENCES**