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A CASE SERIES ON LUNG ADENOCARCINOMA WITH VARYING CLINICAL PRESENTATION

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ABSTRACT Lung cancer is the most common cause of death among all cancer deaths. Adenocarcinoma of the lung is commonly seen in females and nonsmokers. It is a subtype of non-small cell lung cancer (NSCLC). The lesions are more peripherally located and tend to be smaller. Histologically, adenocarcinoma is present as atypical adenomatous hyperplasia (precursor lesion) which progresses to adenocarcinoma in situ and later develops into invasive adenocarcinoma. Adenocarcinoma of the lung is diagnosed by histopathological confirmation via thoracocentesis of pleural effusion, excisional biopsy of an accessible lymph node, bronchoscopy guided lung biopsy, transthoracic needle aspiration, sputum cytology, CT-guided biopsy, medical as well as video-assisted thoracoscopy. This case series comprises three patients with primary lung adenocarcinoma who had been presented with atypical clinical features and emphasised challenges faced in diagnosis.

KEYWORDS : Adenocarcinoma, Clinical features, Histopathology, Metastasis

INTRODUCTION

The incidence of global Lung Cancer accounts for 2.2 million new cases and 1.8 million deaths in the year 2020. Lung cancer stands second among all diagnosed cancer cases. It also accounts for the most common cause of mortality in men and 2nd most common in women. India accounts for 5.9 % and 8.1% population to the total diagnosed cases and cancer-related deaths respectively. Lung cancer is broadly classified into non-small cell lung cancer (NSCLC) and small cell lung cancer. Lung adenocarcinoma is the predominant subtype of NSCLC which accounts for 35% of overall lung cancers and is more common in females and nonsmokers. Lung cancer in non-smokers accounts for 10-15% but has a better survival rate. Risk factors in never smokers include air pollution, asbestos, arsenic, interstitial lung disease, genetic, cytochrome p450, glutathione transferase, chronic obstructive pulmonary disease, and tuberculosis. Adenocarcinomas are now organized into a spectrum ranging from indolent pre-invasive lesions to aggressive forms of invasive adenocarcinoma with poor prognosis1(hutchinson).Histologically invasive non mucinous adenocarcinoma, being the most common subtype has five patterns namely acinar, lepidic, papillary, micropapillary and solid. Lung adenocarcinoma usually presents with the following clinical features cough, weight loss, dyspnea, chest pain, hemoptysis, bone pain, fever, weakness. Radiologically, soft tissue density can appears as irregular or lobulated mass lesion, peripheral nodule, consolidation due to mass lesion obstructing bronchus, pleural effusion. Treatment and prognosis depend on the type and stage of the tumor identified. This case series presents three different patients with primary lung adenocarcinoma with varying clinical presentations and challenges faced in diagnosis.
Materials and method We report a case series of three primary lung adenocarcinoma patients who were presented to tertiary care center in Chennai, the southern part of India.

CASE 1

A 38-year old male, smoker, and salesman in garment presented to neurology OPD with an episode of Seizure, headache and left-sided weakness associated with constitutional symptoms of loss of weight and loss of appetite. MRI Brain showed space occupying lesion in the right parietal lobe (Figure 1A).Patient underwent craniotomy with biopsy histopathology revealed metastatic adenocarcinoma acinar type.Further respiratory evaluation was done chest radiography showed homogenous rounded opacity in left mid zone with left costophrenic angle Blunting (Figure 1B). CT Thorax showed well-defined hypodense foci in the superior lingular segment, mild pleural effusion with pleural thickening (Figure 1C).Ultrasound guided thoracocentesis showed exudative effusion and confirmed the presence of malignant cells. PET CT-showed primary lung malignancy with enlarged subcarinal, Left hilar and interlobar nodes and sub centimetric bilateral cervical lower paratracheal nodal Metastases N3. Metastasis to pleura with multiple pleural nodules and mild pleural effusion, left crural deposits, residual metastasis in right parasagital region in brain (Figure 1).DThe patient was started on tyrosine kinase inhibitors. Radiotherapy was given for brain metastasis.

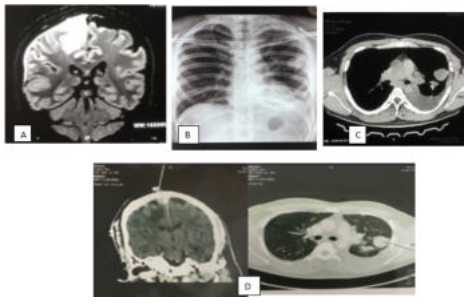

Figure 1

A- MRI brain shows space occupying lesion in the right parietal lobe. B-Chest radiograph shows homogenous opacity in left mid zone with Left costophrenic angle blunting C: CT thorax A well-defined hypodense foci with no significant enhancement in the superior lingular segment of the left upper lobe along the fissure-likely loculated Effusion. Mild to moderate pleural effusion with pleural thickening.

D: PET CT Intensely hypermetabolic irregular lesion measuring 28x27 mm in the posterior segment of LT lung upper lobe primary malignancy T1C. Metabolically active enlarged subcarinal, Left hilar and interlobar nodes and sub centimetric bilateral cervical lower paratracheal Nodal Metastases N3. Metabolically active multiple pleural nodules with mild pleural effusion with nodularities along the major fissure in LT lung Pleural Metastasies. Few hypermetabolic left crural deposits-metastasis rt parasagittal high parital region residual metastasis m1b .

CASE 2

A 63-year old male Smoker who works as a daily wager presented with Complaints of right sided chest pain, Cough with expectoration, breathlessness on exertion and associated with constitutional symptoms of loss of appetite and loss of Weight, who was a known case of CAD underwent PTCA, Type 2 Diabetes Mellitus, Systemic hypertension, treated pulmonary tuberculosis. On auscultation bilateral infra scapular and infra-axillary Velcro crackles are heard.Chest radiography showed right lower zone heterogeneous opacity with right hilar prominence (Figure-2 A). CT Thorax showed soft tissue density noted in the superior segment of the right lower lobe. Bilateral basal subpleural reticulations, Honeycombing with traction bronchiectasis, bilateral upper lobe para septal emphysema features suggestive of combined pulmonary fibrosis with emphysema (Figure 2 B). CT-guided biopsy of soft tissue lesion is suggestive of lung adenocarcinoma with lepidic pattern of tumor cells (Figure 2 C&D). Patient was referred to oncologist for further management.

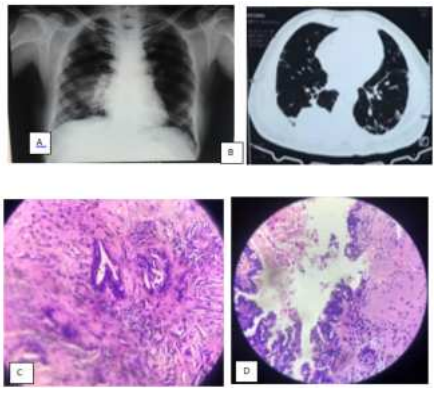

Figure 2:

A-Chest Radiograph shows heterogenous opacity in the right lower zone with right hilar prominence

B-CT Thorax shows soft tissue density noted in the superior segment of the right lower lobe. Bilateral basal subpleural reticulations, Honeycombing with traction bronchiectasis. Bilateral upper lobe paraseptal emphysematous changes are present

C: HPE -High power view showing tumor cells of tumor cells in vague glandular pattern

D: HPE- Low power view showing the lepidic pattern of tumor cells.

CASE 3

A 70-year-old male smoker presented with complaint of left sided chest pain and dyspnea at rest associated with constitutional symptom of loss of weight, and loss of appetite with no underlying co-morbidities. On examination pan digital clubbing was present. On percussion stony dull note is present, auscultation revealed absent breath sounds on left hemi thorax. Chest radiograph showed left sided partial upper zone, mid zone, lower zone, homogenous opacity, and costophrenic angle obliteration with both upper and lower mediastinal shift to the right suggestive of gross pleural effusion (Figure 3A&B). On medical thoracoscopy multiple pleural nodules were present in the costal and diaphragmatic surface of the pleura(figure 3C). Pleural fluid analysis showed exudative effusion with lymphocyte predominance, cytology showed atypical reactive mesothelial cells. Pleural biopsy histopathological examination confirms pseudo mesotheliomatous adenocarcinoma PMA (Figure 3D). PET CT Metabolically active irregular nodular thickening in the major fissure on the left side. Subpleural nodule in the anterior basal segment of the left lower lobe Primary malignancy, T1 Left level 1 axillary node, nodal metastasis, n2. Nodule measuring 17x11mm in the left adrenal metastases- m1c. Irregular nodule measuring 18x13mm in the posterior basal segment of right lung lower lobe- Possibly stage IV-B(figure-3E). Chemical pleurodesis was done and best supportive care was given to the patient.Patient was referred to an oncologist for further management .

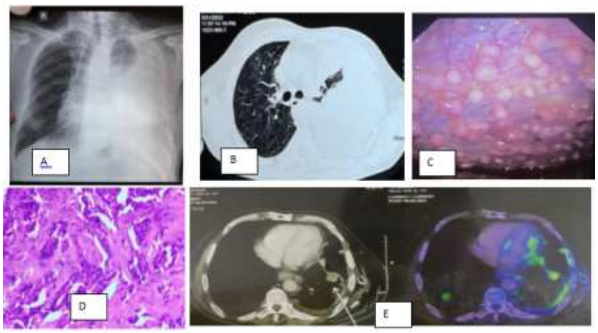

Figure 3

A: Chest radiograph shows massive pleural effusion with mediastinal shift to the right

B: CT thorax shows massive left-sided pleural effusion with tracheal deviation to the right side. Volume loss in upper and lower lobes of left.

C: Thoracoscopy shows left-sided multiple nodules were present on the costal and mediastinal surfaces of pleura.

D: HPE pleural biopsy suggestive of pseudo mesotheliomatous adenocarcinoma

E: PET CT Metabolically active irregular nodular thickening in the major fissure on the left side- Pseudomesotheliomatous adenocarcinoma. Subpleural nodule in the anterior basal segment of the left lower lobe- Primary malignancy, T1 Left level 1 axillary node, nodal metastasis, n2. Nodule measuring 17x11mm in the left adrenal metastases- m1c. Irregular nodule measuring 18x13mm in the posterior basal segment of right lung lower lobe- Possibly stage IV-B.

DISCUSSION

Lung adenocarcinoma is the type of Non-Small cell lung carcinoma where it occurs more common among females and non smoker with presentations of cough with or without sputum production, chest pain, hemoptysis and constitutional symptoms like loss of appetite and weight with predominant peripheral lesion [2,3,4]. whereas in our case series all designated patients were male, smokers with primary lung adenocarcinoma who had presented with different clinical presentation. This case series also emphasize the importance of advanced interventions for diagnosing lung adenocarcinoma like brain biopsy , CT guided biopsy and thoracoscopy guided biopsy respectively in first ,second and third case. On coming to the discussion of each case individually.

Coming to first case, Yen yu lin et al in his retrospective study found that primary lung adenocarcinoma with brain metastasis is common in elderly, female and non-smoker whereas our patient is young male smoker presented with brain metastases which is proven by craniotomy and brain biopsy further analysis and imaging showed that primary tumor is located in lung.

The second patient is presented with rapidly progressive dyspnea which is a predominant feature of fibrosing lung disease on evaluation patient was found to have co-existing combined pulmonary fibrosis and emphysema(CPFE) with primary lung adenocarcinoma which was diagnosed by CT guided biopsy and he is been getting treatment for both CPFE and Lung adenocarcinoma. Faria nasim et al, in their study found that Squamous cell carcinoma is the most common subtype of lung cancer among patients diagnosed with combined pulmonary fibrosis and emphysema (CPFE)[7].

The third patient is presented with chest pain and dyspnea with no history of asbestos exposure, which is generally seen in Pseudomesotheliomatous adenocarcinoma (PMA) which was diagnosed by thoracoscopy guided biopsy for which patient was treated along with pleurodesis. PMA is a rare entity which occurs predominantly in smokers, has a history of asbestos exposure, and men in the fifth and sixth decades of life. PMA has a poor prognosis with an overall survival of approximately 6 months[6].Hence this case series

emphasize the different presentations of lung adenocarcinoma and challenges and difficulties we faced to confirm the diagnosis using various investigating modalities.

CONCLUSION

Despite adenocarcinoma of the lung being more common in females and non-smokers, males, and smokers with a smoking index of more than 200 should be screened with low dose computed tomography to diagnose early and prevent metastasis. Also, this case series highlights the importance of considering lung adenocarcinoma with varying clinical presentations and the application of different diagnostic modalities to confirm the diagnosis. Lung cancer poses the highest mortality rate as well diagnosed. Since advanced stages have a poor 5-year survival rate screening and early diagnosis emphasize a better survival rate.

REFERENCES

1. Hutchinson BD, Shroff GS, Truong MT, Ko JP. Spectrum of Lung Adenocarcinoma. Semin Ultrasound CT MR. 2019 Jun;40(3):255-264. doi: 10.1053/j.sult.2018.11.009.
2. Quoix E. Novel epidemiology in lung cancer-non-smokers, women and cannabis. Revue des Maladies Respiratoires. 2007 Oct 1;24(8 Pt 2):6S10-5..
3. Toh CK, Gao F, Lim WT, Leong SS, Fong KW, Yap SP, Hsu AA, Eng P, Koong HN, Thirugnanam A, Tan EH. Differences between small-cell lung cancer and non-small-cell lung cancer among tobacco smokers. Lung Cancer. 2007 May;56(2):161-6. doi: 10.1016/j.lungcan.2006.12.016. Epub 2007 Jan 31. PMID: 17270313.
4. Agudo A, Ahrens W, Benhamou E, Benhamou S, Boffetta P, Darby SC, Forastiere F, Fortes C, Gaborieau V, González CA, Jöckel KH, Kreuzer M, Merletti F, Pohlabeln H, Richiardi L, Whitley E, Wichmann HE, Zambon P, Simonato L. Lung cancer and cigarette smoking in women: a multicenter case-control study in Europe. Int J Cancer. 2000 Dec 1;88(5):820-7. doi: 10.1002/1097-0215(20001201)88:5<820::aid-ijc21>3.0.co;2-j. PMID: 11072254.
5. Gazdar AF, Thun MJ. Lung cancer, smoke exposure, and sex. Journal of Clinical Oncology. 2007 Feb 10;25(5):469-71.
6. Schreiner SR, Kirkpatrick BD, Askin FB. Pseudomesotheliomatous adenocarcinoma of the lung in a patient with HIV infection. Chest. 1998 Mar 1;113(3):839-41. DOI: https://doi.org/10.1378/chest.113.3.839 PlumX Metrics
7. Nasim F, Moua T. Lung cancer in combined pulmonary fibrosis and emphysema: a large retrospective cohort analysis. ERJ Open Res 2020; 6: 00521-2020 [https://doi.org/10.1183/23120541.00521-2020].