LUNG CANCER, PALLIATIVE AND END OF LIFE ISSUES

Application of exhaled breath analysis using E-nose for diagnosis and monitoring treatment response in lung cancer patients

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Background: Lung cancer is one of the commonest and lethal cancers which is usually diagnosed at an advanced stage. Exhaled breath analysis using E-nose is a unique non-invasive device that has been used for lung cancer diagnosis and monitoring response. 
Objectives: Evaluate the role of E-nose in the diagnosis and monitor treatment response in lung cancer patients. 
Methods: 30 suspected lung cancer patients and 30 healthy controls were enrolled in the study. Exhaled breath was collected in a Tedlar bag and analyzed by E-nose (Cyranose-320). Further, confirmed lung cancer patients were followed up and the analysis was performed after 3 months of treatment. Breath print was analysed by 2D cluster analysis in R-programming. 
Results: 30 healthy subjects [70% males, mean age (SD): 53.8 (10.3)] and 30 suspected lung cancer patients [76% males, mean age (SD): 60.3 (12.7)] were enrolled. 20 patients were pathologically confirmed with lung cancer [stage II (n=9) & stage IV (n=11)], which included 14 Adenocarcinoma & 6 Squamous cell carcinoma. 10 patients were found to be negative. Breath samples were taken at the baseline and 3 months follow-up. The 2D cluster analysis could differentiate the breath prints of healthy subjects from suspected lung cancer, healthy subjects from confirmed lung cancer, negative subjects from lung cancer, and 3 months follow-up from the baseline with around 70% accuracy. 
Conclusion: Breath print can help in differentiating lung cancer patients from healthy subjects. Exhaled breath analysis could be used as a potential non-invasive diagnostic and prognostic tool for lung cancer. 

Eligible for Award due to: This is a first-of-its-kind study from India which uses breath print analysis for the diagnosis of lung cancer. I am proud to be part of this project and premier AIIMS New Delhi. I would like to take this opportunity to share this original research work at NAPCON-2021. Getting appreciation for this novel work at a national forum will not only boost our confidence but encourage us to do a lot more in the field of Breathomics.

Maze in the façade – Epithelioid hemangioendothelioma masquerading as tubercular effusion

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Background: Epithelioid hemangioendothelioma is a rare vascular tumour, originating from vascular endothelial or pre-endothelial cells previously known as intravascular bronchioalveolar tumour.

Case Study: 38 yr female, non smoker, non alcoholic, with no history of ATT intake presented with complaints of cough, dyspnea and left sided chest pain for 4 months that increased since 10 days. On examination she presented with tachypnea, dull note on percussion on left hemithorax and bronchial breathe sound in left infraclavicular region. Routine examination revealed anaemia. CXR- suggested left moderate pleural effusion. CECT THORAX- suggested large lobulated heterogeneous enhancing mass in left hilar region causing encasement of left pulmonary artery and left main bronchus, also causing abutment of arch of aorta, descending aorta. Repeated pleural fluid malignant cytology was suggestive of tubercular effusion and negative for malignant cell. Bronchoscopy- revealed left endobronchial mass obstructing left main bronchus. Endobronchial biopsy revealed epithelioid hemangioendothelioma. Patient was managed symptomatically and was referred to the department of cardiothoracic vascular surgery for surgical resection.

Discussion: Epithelioid hemangioendothelioma is described as a rare aggressive tumour affecting lungs, liver, bones. Symptoms consist of chest pain, anaemia, occasionally clubbing and weight loss. Radiologically appears as multiple perivascular nodules, that can range upto 2 cm in size, usually found at small and medium sized vessels. Hilar lymphadenopathy, pleural effusions can also be noticed.

Conclusion: Tubercular effusion being common in middle age, with no history of smoking or alcohol, shouldn’t be left under evaluated for malignancy, as seen in this case.

Sensitivity and specificity of bronchoscopy appearance and cellular analysis of bronchoalveolar lavage for detecting malignancy in lung masses

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Background: Early diagnosis of lung cancer is necessity of this era for reducing lung cancer death rate. Bronchoscopy is an important intervention for endobronchial lesion in lung masses, and their Bronchoalveolar lavage (BAL) and Cytological techniques are safer, economical and provide quick results.

Materials and Methods: This Prospective intervention based Cross sectional study was conducted among patients attending respiratory OPD at Sir Sunder Lal Hospital, BHU, Varanasi, with suspicion of lung Mass (70 cases) which were chosen on the basis of history, physical examination, Chest X-Ray and Computed Tomography of chest, from October 2018 – July 2020.I had classify the different visuals of lung masses and took BAL via Bronchoscope, and lung biopsy was considered as gold standard.

Results: I had seen that Right side 61.4% involvement is more as compare to Left side 35.7%. After visualisation via bronchoscope, it was observed that 64.3% Endobronchial growth, 11.4% Mucoid impaction and 24.3% had External compression out of 70 Lung mass cases. BAL of 70 Cases showed High Neutrophil and Low Lymphocytes were more risk of malignancy.
Conclusion: Visualisation of lesion and its character via Bronchoscope increase yield of Lung malignancy and BAL is an important tool in screening central as well as in accessible lesions. It is very much cost effective.

Neuroendocrine tumour of the lung – A three year retrospective experience of tertiary care centre in southern India

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Background: Lung neuroendocrine tumors (NET) are rare neoplasm of the lung characterized by an indolent clinical course. Lung neuroendocrine tumors spectrum includes low-grade typical carcinoid (TC), intermediate grade atypical carcinoid (AC), and high grade, both large cell neuroendocrine carcinoma (LCNEC) and small cell lung cancer (SCLC), with significant differences in presentation, management, and survival. Even though it is a rare neoplasm of the lung assessing the clinical, pathological, and radiological pattern of Lung NET useful for clinicians to make further evaluation and treatment plans.

Materials and Methods: This is a retrospective study evaluating clinicopathological and radiological characteristics of Lung NET in tertiary care hospital over a period of 3 years (2019-2021). The data analyzed included patient’s age, sex, smoking history, presenting complaints, radiological appearance, mode of diagnosis.

Results: There were 9 cases of Lung NET in which SCLC (33%), TC (44%) and LCNE (22%). The mean age of presentation for SCLC is 57.25 years, TC is 28 years and large cell NET is 29. In patients with SCLC and LCNEC the majority were male patients of which 66% were smokers. Among TC all were females. The most common presentation among TC was hemoptysis and in SCLC was superior vena cava syndrome. Among SCLC, two were presented with lymph node metastasis (66%), one with right lung upper lobe mass (33%). Among carcinoid, the most common site was right side endobronchial mass (75%), in LCNEC one presented with right endobronchial mass another one mediastinal mass with pleural effusion.

Conclusion: Typical carcinoid most commonly occurs in the younger age group compared to other NET. Most of the NET are situated central rather than peripheral. Even though pleural effusion is rare in NET but some cases can present with pleural effusion.

Deep fibromatosis – The diagnostic dilemma

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Introduction: Desmoid type fibromatosis (DTF), also known as deep fibromatosis or desmoid tumor is a rare, locally invasive, non-metastasizing soft tissue tumor. It accounts for approximately 3.5% of all fibrous tumors, with an annual incidence of approximately 2.4/million. Here, we present such a case of desmoid fibromatosis which was misdiagnosed as a case of pleural effusion.

History: A 46-year-old female, presented with a chief complaint of right sided chest pain, non radiating, for a duration of 1 year. She gave history of frequent hospital visits during past 1 year for the same symptoms, for which she was given symptomatic treatment.

Clinical Findings: Examination revealed right side intercostal fullness with decreased chest movements and reduced chest expansion. There was stony dull note on percussion and air entry was reduced in right side.

Dianosis and Management: Diagnosis was made with CECT thorax which showed intrathoracic mass lesion and this was further confirmed FNAC which showed mesenchymal tumor. She underwent intrathoracic tumor excision for the same and post-op histolopathology clinched the diagnosis of desmoid tumor.

Learning Points: The basic idea of reporting this case is its rarerity in its incidence and diagnostic dilemma. Our patient was one among the million with the diagnosis of desmoid tumors. This case highlights the diagnostic dilemma and the need for keeping desmoid tumors as a differential diagnosis when patient presents with a intrathoracic mass with benign symptoms. An early diagnosis and treatment can prevent bleeding, sepsis and recurrence.

Isolated unilateral pleural metastasis from renal cell carcinoma without radiological abnormality

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Background: Renal Cell Carcinoma (RCC) accounts for approximately 2% of all cancers. RCC patients eventually present with metastatic disease more of lung metastasis. Pleural metastasis is comparatively rarer than lung metastasis. RCC presenting as isolated unilateral metastasis, that too no radiological abnormality is unknown.

Case Study: 51 years’ male with diabetes mellitus & alcoholic presented with left pleural effusion & started with anti-tubercular treatment after diagnosis. On 2 month follow up chest X-ray showed? loculated effusion? Pleural mass. On further evaluation with CT scan & MRI chest showed lobulated pleural based soft tissue lesions in left hemi thorax? Pleural metastasis from ca bronchus? primary neoplasm –mesothelioma. CT guided lung biopsy done. Pleural biopsy showed metastatic adenocarcinoma with
Immunohistochemistry positive for AE1/AE3 & weakly positive for PAX8 & negative for WT1 and TTF-1 consistent with renal primary. Patient asymptomatic for RCC & also radiological imaging of kidney was normal. Patient at present on tablet Sunitinib a multi-specific tyrosine kinase inhibitor.

Discussion: Isolated unilateral pleural metastasis without any signs or symptoms of RCC with normal radiological imaging of kidney is very rare. Thorough radiological imaging & immunohistochemistry of biopsied sample played diagnostic role.

Conclusion: Isolated unilateral pleural metastasis from RCC are very rare and even rarer is one without radiological kidney abnormality.

Impact of COVID-19 pandemic on follow up of lung cancer patients

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Background: Defaults in serious diseases like lung cancer cause significant morbidity and mortality. Thus an effort was made to know the impact of COVID-19 pandemic on the follow up of lung cancer patients. Reasons once identified may help in reducing the default rate in future during similar conditions.

Methods: 115 patients of carcinoma lung on chemotherapy were enrolled and followed up till the end of the study during COVID-19 pandemic. Defaults if any was studied and analysed by questionnaire method.

Results: Mean age was 54.63 (SD-12.11) majority of the patients were males 91 (79.1%), mainly from rural background (75.7%). The major histological type was adenocarcinoma 65 (56.5%). 70 (60.9%) patients were ex-smokers and 45 (39.1%) were non smokers. Mean distance from home to hospital was 156.42 (SD-147.56). All the patients were of advanced cancer; i.e. stage III or IV. 68 (59.13%) patients defaulted during the study period. 77 defaults were documented, 60 patients (88.24%) defaulted once, 7 patients (10.29 %) were defaulted twice and 1 defaulted (1.47 %) thrice. Lock down in 22 (32.35%), poor health in 13 (16.88%) and fear of covid in 12 (15.58%) were the most frequent reasons. No correlation was found between ages, gender, residence, distance from home to hospital, patient education, care taker education, socio economic status, ECOG status, stage of the disease, type of chemotherapy (conventional or oral TKI) with the default rate.

Conclusion: Even though the OPD and indoor services never stopped for cancer patients, still major cause of default in were covid related problems, like lock down, fear of covid, transport related problems during COVID-19 pandemic.

Clinico-radiological pathological profile of female lung cancer patients

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Background: Lung cancer is the leading cause of death in developed countries and developing countries. Both incidence and mortality from lung cancer in females is increasing while it is declining in males in developed countries.

Objective: To study the clinical radiological pathological profile of female lung cancer patients.

Methods: It’s a Descriptive study conducted in the Department of Pulmonary medicine from September 2020 to September 2021. 65 patients with histologically proven lung cancer were included in the study.

Results: Among 65 patients mean age is 61. 95.4% from the rural areas. 75.4% had exposure to secondhand smoke. 93.8% to biomass fuel exposure. Dyspnoea (92.4%) and cough (84.6%) are the commonest presentation. the commonest initial symptom was cough (32.3%). Radiologically mass lesion [41.5%] is the most common followed by pleural effusion [35.4%]. The right side [64.5%] is more affected. Ultra sounded-guided biopsy [38%] followed by thoracoscopy [29.2%] as diagnostic intervention. Adenocarcinoma [89.2%] small cell carcinoma [4.6%] squamous cell carcinoma [3.1%], others [3.1%] in patients respectively. Most patients presented in stage 4 [56.9%] followed by Stage-3 [43.1%].

Conclusion: Majority of the female lung cancer patients with peripheral lesion are adenocarcinoma and they presented in late stage [3&4]. Most of the patient had delay in approach to health care facilities.