Original Research Paper

Volume - 13 | Issue - 02 | February - 2023 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Pulmonary Medicine

CLINICAL & RADIOLOGICAL STUDY OF LUNG METASTASIS FROM MALIGNANCY IN ORGAN OTHER THAN LUNG

Dr. Aswathi.P — Post graduate student Department of Pulmonary Medicine Kurnool Medical College, Kurnool-518002 Andhra Pradesh

Dr. M. Venkata Rao* — Professor & HOD, Department of Pulmonary Medicine Kurnool Medical College*Corresponding Author

ABSTRACT **INTRODUCTION:** Metastatic lung cancer is the second most common pulmonary malignancy1. Most common primary tumours resulting in pulmonary metastases include breast, colorectal, renal carcinoma, uterine leiomyosarcoma and head and neck carcinoma. **AIMS & OBJECTIVES:** To study clinical features & radiological pattern of lung metastasis from malignancy in organs other than lung. **MATERIALS & METHODS:** Descriptive study conducted in 30 patients who attended pulmonary Medicine Department of Kurnool medical college over a period of 17 months from January 2021 to May 2022 with a history of malignancy in organs other than lung and with respiratory complaints with a strong suspicion of metastasis are investigated with appropriate test. Data analysis carried out using standard statistical methods **OBSERVATION:** Age group of study population is 10-70 years with 40% males & 60% females. Most common primary tumour having metastasis in lungs is breast (23%) followed by oesophagus, cervix, thyroid, stomach, femur (7% each). Most common symptom was cough (87%) and most common radiological pattern of metastasis was nodular metastasis (13%). **CONCLUSION:** To conclude, lung metastasis is having variety of presentations so screening should be done more frequently in individuals having higher risk of lung metastasis and a more sensitive test, such as low dose CT scan is suggested.

KEYWORDS : Lung Metastasis, Malignancy, Organ, Dissemination

INTRODUCTION

Metastatic dissemination is a feature of highly malignant progression which is responsible for poor prognosis of affected patients and eventually leads to their death. The lung was among the most prevalent places for malignant tumours from other parts of the body to metastasize. 20-54% of metastatic tumours forming elsewhere in our body can develop pulmonary metastasis. Most common primary tumours resulting in pulmonary metastases include breast, oesophagus, colorectal, renal carcinoma, uterine leiomyosarcoma and head and neck carcinoma[2].

AIMS & OBJECTIVES

To study clinical features & radiological pattern of lung metastasis from malignancy in organs other than lung.

MATERIALS & METHODS

Descriptive study conducted in 30 patients who attended pulmonary Medicine Department of Kurnool medical college, Kurnool, AndraPradesh over a period of 17 months from January 2021 to May 2022 with a history of malignancy in organs other than lung and with respiratory complaints with a strong suspicion of metastasis are investigated with chest X-ray, blood investigations, sputum examination, CT scan, pleural fluid analysis and whole body PET scan if required. Data analysis carried out using standard statistical methods.

INCLUSION CRITERIA

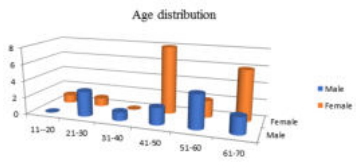
1. Patients with age > 18 years.
2. Patients with primary malignancy in organs other than lung with radiological changes suggestive of metastasis in the lung.
3. Patients giving consent for the study.

EXCLUSION CRITERIA

1. Patients with age < 18 years.
2. Patients with direct invasion of tumor into lung.
3. Patients with primary malignancy in the lung.
4. Patients who do not give consent for study

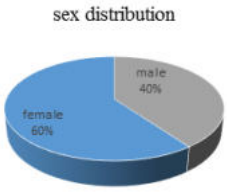
RESULTS

Graph 1: Age Distribution of Patients with Lung Metastasis.



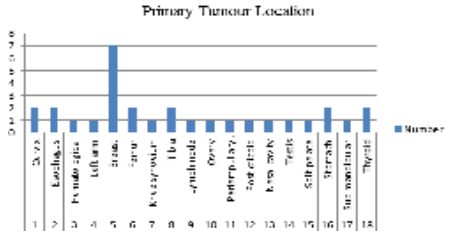
The distribution of age varied from 10 to 70 years. The overall mean age of the study subject was 49.9 years. For male patients, the mean age was 47 and for female patients, it was 46.05 years. There was an overall female predominance with male/female ratio of 2:3.

Graph 2: Sex Distribution of Patients with Lung Metastasis.



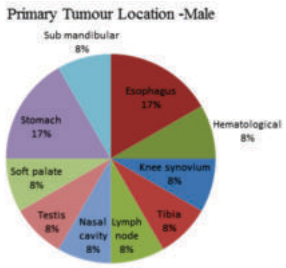
Out of total 30 cases, 60% (n=18) were female and 40% (n=12) were male.

Graph 3: Primary Tumour Location



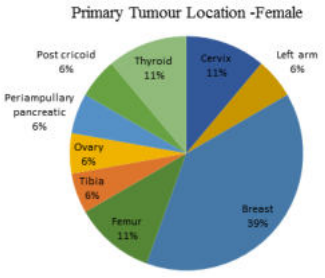
Graph 3 shows that Primary Tumour location - Breast (23%), cervix, thyroid, femur, esophagus, stomach (7% each). Ovary, pancreas, post cricoid, hematological, tibia, knee synovium, testis, soft palate, submandibular, nasal cavity, lymph node (1% each).

Graph 4: Primary Tumour Location in Males



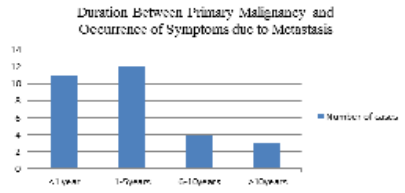
Esophageal cancer, stomach cancer (17% each), others hematological, tibia, knee synovium, testis, soft palate, submandibular constitutes 8% each

Graph 5 – Primary Tumour location in females



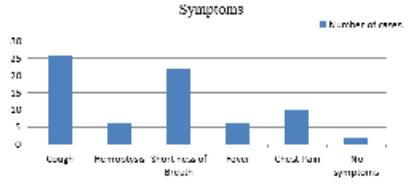
Breast (39%), Cervix, thyroid, femur (11% each) ovary, pancreatic, post cricoid, tibia constitutes 6% each

Graph 6: Duration between Primary Malignancy and occurrence of Symptoms due to Metastasis



40% of the patients presents within 1-5 years of Primary malignancy. 37% of the patients presents within 1 year. 13% of the patients presents within 6-10 yrs. 10% of the patients presents after 10 years of Primary malignancy.

Graph 6: Symptoms presented at the time of Metastasis



87% presented with cough, 73% shortness of breath, 33% chest pain, 20 % hemoptysis and fever each. 7% nil symptoms at the time diagnosis of lung Metastasis. 93% of patients with symptoms. 7% of patients with nil symptoms.

Table: 1- Primary tumour and radiological pattern of lung metastasis

Primary tumour	Radiological patterns
Cervix (SCC)	Solitary Metastatic Mass, Nodular Metastasis
Oesophagus	Metastatic Consolidation, Nodular Metastasis
Hematological	Miliary Metastasis
Left arm(fibrosarcoma)	Spiculated Nodular Metastasis
Breast	Nodular Metastasis and Lymphangitis Carcinomatosis, Solitary Nodule, Spiculated Nodular Metastasis, Malignant pleural effusion, Lymphangitis Carcinomatosis
Femur	Calcifications
Knee synovium (spindle cell sarcoma)	Cannon Ball Metastasis
tibia	Metastatic Hemothorax with Pleural Calcific Metastasis, Cannon Ball Metastasis
thyroid	Miliary Metastasis, Nodular Metastasis

Primary tumour	Radiological pattern
Lymph node	Pleural nodules
Ovary (adenocarcinoma)	Malignant pleural effusion
Periampullary pancreatic	Sub pleural Nodular Metastasis
Post cricoid (SCC)	Cavitations
Nasal cavity(sarcoma)	Nodular along with Cavitary Metastasis
Testis (germ cell tumour)	Nodular Metastasis
Soft palate (SCC)	Metastatic Consolidation
Stomach	Solitary Mass with Satellite Nodules, Metastatic Consolidation
Sub mandibular	Lymphangitis Carcinomatosis

DISCUSSION

The current study comprised of 30 patients who were eligible according to inclusion and exclusion criteria from the pulmonary medicine OP or wards of government general hospital, Kurnool, Andhra Pradesh who presented with a history of malignancy in organs other than lung and with respiratory complaints with a strong suspicion of metastasis over a study period of 17 months.

Average age presented was 49.9 years. For male patients, the average age was 47 and for female patients, it was 46.05 years. It is similar to that in studies by Bodegom et al[3], in which average age at diagnosis of the primary tumour was 58.7 ± 7.2 years, while the average age at diagnosis of metastasis was 65.3 ± 6.9 years. There was an overall female predominance with male/female ratio of 2:3.

Localization of the primary tumor differed depending on the sex of the patients. In women, breast (39%), Cervix (11%) and thyroid, femur (11% each) ovary, pancreatic, post cricoids constitute 6% each. Among men Esophageal cancer & stomach cancer (17% each), others hematological, tibia, knee synovium, testis, soft palate, submandibular constitutes 8% each.

87% presented with cough followed by breathlessness (73%) and 7% were asymptomatic. It is similar to that in studies by Sang Hoon Lee et al[4], in which cough was the most prevalent presenting symptom in 22 (51.2%) patients, followed by dyspnea in 12 patients (27.9%). 12 patients (27.9%) with lung metastases had no symptoms.

Average time during the first and second metachronous tumours was 4.5 years ± 3.0. It is similar to that in studies by Bodegom et al[2], in which the average time in the first and second metachronous tumour was 6.6 years. Due to changes in diagnostic procedures, tumour types, time period between primary tumours and lung metastases, as well as the frequency and type of scans employed to detect them, reported rates of pulmonary metastases vary greatly.

Most common radiological pattern of metastasis was nodular metastasis (13%) followed by lymphangitic carcinomatosis, cannon ball metastasis, malignant pleural effusion (10% each). It is almost similar to that in studies by Noni Novisari Soeroso et al[5], in which Most common radiological pattern of metastasis was nodular metastasis (39%) followed by malignant pleural effusion (20% each).

CONCLUSION

Metastatic lung cancer, affects 20 to 54 percent of cancer patients, is the second most common kind of pulmonary malignancy. females have a higher incidence than males. Most common primary tumour having metastasis in lungs is breast (23%) followed by oesophagus, cervix, thyroid, stomach, femur (7% each). 40% of the patients presents with metastasis within 1-5 years of Primary malignancy. Most common symptom is cough (87%) followed by breathlessness (73%) and chest pain (33%). Thoracic metastases include a variety of imaging patterns, most common radiological pattern of metastasis was nodular metastasis (13%) followed by lymphangitic carcinomatosis, cannon ball metastasis, malignant pleural effusion (10% each). Lung metastasis is having variety of presentations so screening should be done more frequently in individuals having higher risk of lung metastasis and a more sensitive test, such as low dose CT scan (1.4msv) is suggested.

REFERENCES

1. Jamil A, Kasi A. Lung Metastasis. [Updated 2022 Feb 24]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK553111/
2. Stella GM, Kolling S, Benvenuti S, Bortolotto C. Lung-Seeking Metastases. Cancers (Basel). 2019 Jul 19;11(7)
3. van Bodegom PC, Wagenaar SS, Corrin B, et al Second primary lung cancer: importance of long term follow up.Thorax 1989;44:788-793. doi: 10.1136/thx.44.10.788. PMID: 2595619; PMCID: PMC1020843

4. Lee SH, Jung JY, Kim DH, Lee SK, Kim SY, Kim EY, Kang YA, Park MS, Kim YS, Chang J, Kim SK. Endobronchial metastases from extrathoracic malignancy. Yonsei Med J. 2013 Mar 1;54(2):403-9. doi: 10.3349/ymj.2013.54.2.403. PMID: 23364974; PMCID: PMC3575990.
5. Soeroso NN, Afiani D, Tarigan SP, Qodry F. The Characteristic of Secondary Lung Tumours in Medan. Open Access Maced J Med Sci. 2019 Aug 20;7(16):2623-2625. doi: 10.3889/oamjms.2019.410. PMID: 31777619; PMCID: PMC6876807.