Case Report

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Quick Response Code:

Website: www.jehp.net

DOI: 10.4103/jehp.jehp_355_24

# 'Beyond the blues': A case report on depression as initial presentation of lung cancer with brain metastasis

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**Abstract:**

Lung cancer usually presents with pulmonary symptoms such as cough, dyspnoea, and extrapulmonary symptoms with metastatic involvement of the brain may present as delirium or neurological deficits. However, in rare cases, psychiatric symptoms such as depression may be the only initial manifestation of lung cancer with brain metastasis, which may mislead the clinical picture. We describe a case of a middle-aged female with no past or family history of medical and psychiatric illness who was brought with low mood, decreased social interaction, fatigue, and decreased appetite in the past 2 weeks. She also had poor concentration and memory disturbances with difficulty in performing household chores. Interpersonal relationship issues in the family were attributed as precipitating factors. She was diagnosed with major depressive disorder and initiated on antidepressants but with no improvement. Later course of the illness, she developed a bilateral diffuse headache associated with vomiting. On mental status examination, she had decreased psychomotor activity. Her speech was minimal with decreased response rate and little variability in the tone. She was not able to describe her mood and her affect was restricted. No abnormal beliefs or psychotic symptoms were elicited. On general physical examination, mild deviation of the angle of mouth was noted. Because of the suspicion of organic etiology, a magnetic resonance imaging brain scan with contrast was suggested and an intracranial space-occupying lesion involving the left frontal lobe with significant perilesional edema causing mass effect was noted. Further, a positron emission tomography scan revealed hypermetabolic soft tissue mass over the supra-hilar region of the right lung likely indicating the primary site with brain metastasis. Here in this case, the initial presentation of psychiatric symptoms in lung cancer with brain metastasis obscured the underlying central nervous system pathology. This case illustrates the need for a holistic approach with prompt and detailed assessment including neuroimaging in patients with a high index of suspicion of organicity.

**Keywords:**

Brain metastasis, depression, frontal lobe, lung cancer

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Received: 22-02-2024
Accepted: 03-07-2024
Published: 28-02-2025

## Introduction

With the debilitating nature and unpredictable outcomes of the illness, patients with cancer are predisposed to depression and other psychiatric disorders. Patients with lung cancer were reported to have the highest prevalence of major depression (13.1%).[1] However, rarely, depressive symptoms without the pathognomonic features of malignancy may be the only presenting features in lung cancer. Lung cancer has a higher incidence of brain metastasis, the most common adult intracranial neoplasm. However, 34.5% of patients with non-small cell lung cancer and 21.4% with small cell lung cancer had brain metastasis worsening their overall prognosis.[2] Psychiatric symptoms may be the only initial manifestation of such intracranial space-occupying lesions misleading the entire clinical picture.[3] This case was an unusual presentation with depressive symptoms as the first clinical features of lung malignancy with brain metastasis affecting the left frontal lobe.



**How to cite this article:** D'Souza PR, Srivastav A. 'Beyond the blues': A case report on depression as initial presentation of lung cancer with brain metastasis. J Edu Health Promot 2025;14:80.

## Case Report

A 40-year-old married lady had complaints of low mood, decreased social interaction, fatigue, and decreased appetite for the past 2 weeks. She also had poor concentration and memory disturbances with significant interference in performing household chores, which worsened over a week. The husband attributed the current symptomatology as secondary to recent interpersonal issues in the family. She had no past or family history of medical and psychiatric illness. Hence, she was diagnosed with major depressive disorder and initiated on Escitalopram 10 mg by a private psychiatrist, but there was no improvement in symptoms. Later course of the illness, she developed a bilateral diffuse headache associated with vomiting for a week. No altered sensorium or seizures. She was brought to the Psychiatry Outpatient Department for further management.

On mental status examination, she had decreased psychomotor activity. Her speech was minimal with decreased response rate and little variability in tone. She was not able to describe her mood and her affect was blunt. No abnormal beliefs or psychotic symptoms were found. A cognitive function examination showed impairment in her recent memory. On general physical and systemic examination, blood pressure was 150/90 mmHg and Pulse was 80/min. A mild deviation of the angle of mouth was noted with no drooling of saliva. Reflexes in the upper and lower limbs were normal. Fundoscopy showed features suggestive of papilledema.

Blood investigations showed low hemoglobin (9.4 gm/dl) with peripheral smear suggestive of microcytic hypochromic anemia. Other investigations including serology, renal, liver, and thyroid function tests were normal. Because of the mild deviation of the angle of mouth and history of headache associated with vomiting, Magnetic resonance imaging (MRI) brain with contrast [Figure 1] was suggested, and a well-circumscribed rounded inhomogeneous enhancing altered signal intensity lesion (12*11*12 mm) involving the left frontal lobe with significant perilesional edema causing mass effect was noted suggestive of intracranial space-occupying lesion. Further Positron emission Tomography scan [Figures 2 and 3] was conducted and showed hypermetabolic soft tissue mass over the supra-hilar region of the right lung likely indicating the primary site with brain metastasis. Hence, she was referred to the Oncology department for further management.

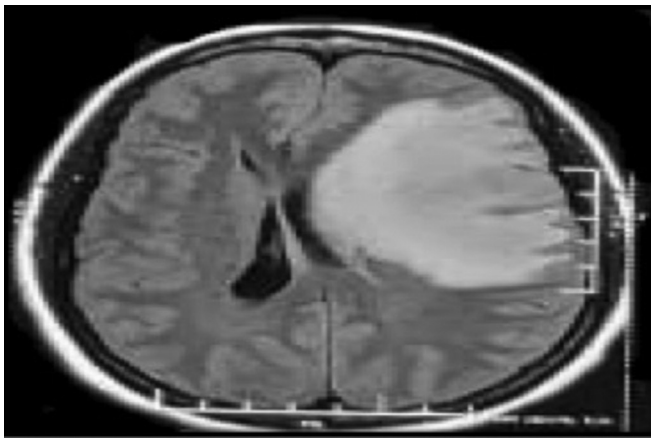

**Figure 1:** MRI brain contrast showing left frontal lobe lesion with significant perilesional edema causing mass effect

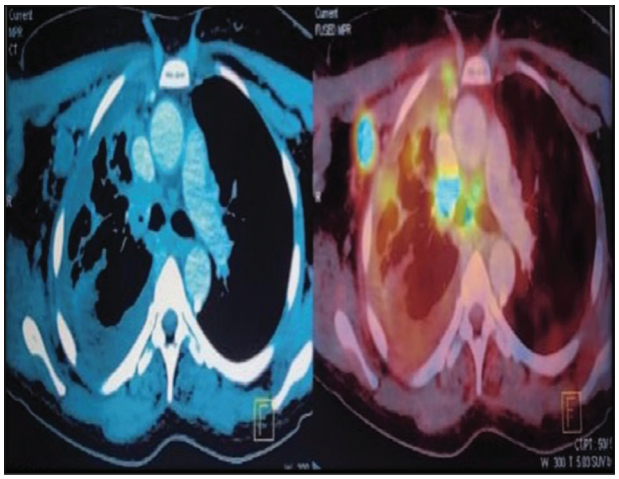

**Figure 2:** Axial section of contrast enhanced CT scan and axial section of 18F-FDG PET- CT scan with hyper-metabolic and enhancing soft tissue mass involving the supra-hilar region of right lung causing mass effect on the adjacent right bronchus

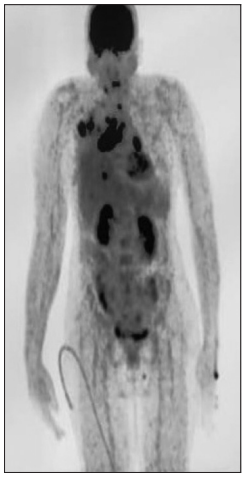

**Figure 3:** 18F-FDG Whole body PET-CT scan with hyper-metabolic regions showing uptake of the tracer in the supra-hilar region of right lung, few mediastinal & axillary lymph nodes and in the left frontal lobe of the brain

## Discussion

Metastases are the most common intracranial neoplasm with the most common primary tumors from lung and breast cancer.[4] Brain tumors as primary cause of

psychiatric manifestations are a rarity, hence, contributing to a myriad of diagnostic challenges. Keschner *et al*.[5] reported that among patients with intracranial neoplasm, though 78% had psychiatric manifestations, few presented exclusively with psychiatric complaints as their initial presentation.

A review by Fatima Ghandour *et al*.[6] reported that 10.3% of the cases had exclusively psychiatric symptoms and 38.2% had psychiatric and generalized neurological symptoms without any focal neurological deficits. Because of the misleading picture, most patients were initiated on psychotropics after the manifestation of psychiatric symptoms but with no adequate response to treatment. Similarly, in this case, during her initial presentation, she was diagnosed with major depressive disorder by a psychiatrist and initiated on antidepressants, but her symptoms worsened.

Frontal and temporal lobe tumors are implicated in psychiatric manifestations more than the parietal or occipital lobe. Frontal lobe lesions including metastasis, predominantly involving the left lobe can present with depressive symptoms, while right-sided lesions may have manic symptoms.[7] In this case, lung cancer had metastasized to the brain specifically to the left frontal lobe causing depressive symptoms.

Although the patient had significant stressors and features suggestive of a depressive episode, certain factors pointed toward organic etiology. She had rapid deterioration of her symptoms over the following week with a steep decline in her functioning. Her recent memory was impaired. In the later course of the illness because of the mass effect of the intracranial neoplasm, she had a headache associated with vomiting and mild deviation of the angle of mouth. Hence, prompt and detailed assessment including neuroimaging was advised. The presentation of psychiatric manifestations such as depressive symptoms as initial features could lead to overlooking the underlying organicity and delay in diagnosis and treatment.

Patients with specific and focal neurological symptoms associated with intracranial neoplasm are usually diagnosed quickly, but patients with other symptoms such as psychiatric or generalized neurological symptoms pose a challenge to the diagnosis. Hence, it is necessary to recognize the concept of brain tumors with absence or limited neurological signs and to look beyond the psychiatric manifestations. Focus toward organicity may be shifted in patients with no personal or family history of psychiatric illness if any sudden or acute change in behavior, mood, or personality is associated with deterioration of cognitive functioning. In these cases, neuroimaging in addition to the neurological examination and neuropsychological assessment may be of help.[8]

## Conclusion

This case highlights the need for a holistic approach, if any index of suspicion of organic etiology, as psychiatric symptoms can mask the underlying central nervous system pathology.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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