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First-episode Psychosis Revealing an Underlying Brain Tumor: The Psychiatric Masquerade

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Introduction

First-Episode Psychosis (FEP) is typically associated with primary psychiatric disorders such as schizophrenia or affective psychoses. However, in a minority of cases, it can be the initial presentation of an underlying neurological condition, including brain tumors. Misattributing such presentations solely to psychiatric etiologies may result in delayed diagnosis and poor outcomes. Clinicians often face the challenge of differentiating between functional and organic causes, especially when the neurological findings are subtle or absent on initial examination. Neuroimaging plays a vital role in the evaluation of atypical or treatment-resistant psychosis, particularly when onset is abrupt, the patient is older, or there are accompanying cognitive or neurological signs. This report highlights a rare but critical cause of new-onset psychosis—a frontal lobe tumor and underlines the importance of maintaining a broad differential diagnosis. This case also underscores the importance of a comprehensive differential diagnosis in psychiatric emergencies. While functional psychiatric disorders remain the most common cause of first-episode psychosis in young adults, clinicians must remain vigilant for medical and neurological conditions that can mimic these presentations. Brain tumors, autoimmune encephalitis, metabolic disorders and infections such as neurosyphilis or HIV-related neurocognitive decline should all be considered in the appropriate clinical context [1].

Description

Organic brain lesions, particularly those involving the frontal and temporal lobes, can present with psychiatric symptoms as the initial or sole manifestation. Frontal lobe tumors are especially notorious for causing personality changes, executive dysfunction, emotional blunting and in some cases, acute psychosis. These psychiatric presentations often mimic primary psychiatric disorders such as schizophrenia, bipolar disorder, or brief psychotic episodes, making timely diagnosis challenging. In young adults, especially those without prior psychiatric history, there is a tendency to attribute first-episode psychosis to primary psychiatric conditions. However, this can lead to misdiagnosis, delayed treatment and potentially worsened outcomes. Clinical features that should prompt suspicion of an underlying organic cause include rapid symptom progression, cognitive deficits, poor response to standard psychiatric treatment and subtle neurological signs such as confusion, disorientation, or focal deficits. In such cases, neuroimaging becomes a critical diagnostic tool. MRI, with its superior soft tissue contrast, is particularly useful in detecting structural abnormalities such as tumors, demyelinating lesions, or encephalitis that may present psychiatrically. Even in the absence of overt neurological findings, imaging should be considered in all atypical cases of psychosis to avoid missing a treatable underlying pathology [2].

Moreover, the resolution of psychiatric symptoms following treatment of the underlying lesion such as surgical resection of a tumor—underscores the importance of comprehensive medical evaluation. While antipsychotics may offer temporary symptom control, they do not address the root cause in cases of organic psychosis. Misdiagnosis can result in unnecessary long-term psychiatric medication use, social stigma and a diminished quality of life. Multidisciplinary collaboration between psychiatry, neurology and neurosurgery is essential to optimize diagnostic accuracy and patient care. Clinicians must remain vigilant and open to organic differentials, particularly when the clinical picture deviates from typical psychiatric patterns. Looking forward, there is a pressing need to develop standardized protocols that incorporate routine medical screening, including neuroimaging, in the assessment of first-episode psychosis particularly when atypical features are present. Decision-support algorithms utilizing clinical red flags (e.g., late age of onset, neurological signs, or rapid deterioration) can aid clinicians in identifying which patients require early imaging. Such protocols could be integrated into emergency and psychiatric settings to prevent delays in diagnosing potentially reversible causes of psychiatric symptoms [3].

Advances in neuroimaging techniques, including functional MRI and Diffusion Tensor Imaging (DTI), offer promise for detecting subtle structural and connectivity abnormalities that may underlie psychiatric symptoms. These tools, when used adjunctively with standard MRI, could enhance diagnostic sensitivity, especially in early-stage brain tumors or inflammatory processes. Additionally, the incorporation of artificial intelligence in image interpretation may improve early detection of intracranial pathology by identifying patterns that may not be immediately apparent to the human eye. From an educational standpoint, training programs for psychiatrists and emergency physicians should emphasize the importance of ruling out organic causes in acute psychiatric presentations. Increased awareness and early interdisciplinary consultation can dramatically alter the clinical course and long-term prognosis for patients with secondary psychosis. Furthermore, patient and family education is vital to reduce the stigma associated with psychiatric symptoms, encourage timely presentation and support informed decision-making regarding diagnostic testing and treatment options. A systems-based approach that bridges psychiatry with neurology, radiology and primary care is key to improving diagnostic accuracy and ensuring that treatable causes of psychosis are not overlooked [4].

In parallel with diagnostic advancements, future research should focus on identifying reliable clinical biomarkers that can help differentiate primary psychiatric disorders from secondary, organic causes. Emerging studies suggest that serum markers of inflammation, autoimmunity and neuronal injury such as neuron-specific enolase, S100B protein and cytokine profiles —may hold diagnostic value in distinguishing organic psychosis. While these markers are not yet routinely used in clinical practice, their incorporation into early diagnostic workups could provide a non-invasive, cost-effective method to guide further investigation, including neuroimaging or lumbar puncture. Lastly, the development of multidisciplinary First-Episode Psychosis (FEP) clinics that include access to neurologists, psychiatrists, radiologists and neuropsychologists may serve as a model for comprehensive evaluation and management. These specialized clinics can offer not only diagnostic clarity but also early therapeutic interventions that integrate medical and psychiatric care. Establishing such centers, especially in academic or high-volume healthcare settings, could significantly reduce misdiagnosis rates, improve outcomes and ensure that patients presenting with psychiatric symptoms receive holistic and appropriate care from the outset [5].

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Conclusion

Psychiatric symptoms may be the first sign of an underlying brain tumor, especially those located in the frontal lobe. This case highlights the importance of comprehensive assessment including neuroimaging in patients with first-episode psychosis and atypical features. Early identification of structural causes can lead to appropriate treatment and complete symptom resolution, avoiding misdiagnosis and long-term psychiatric morbidity. Clinicians must remain vigilant and consider organic etiologies in the differential diagnosis of new-onset psychosis, particularly when the clinical picture is unusual or rapidly evolving.

Acknowledgment

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Conflict of Interest

None.

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