



Case Report

The need for neuroimaging in first manifestations of psychiatric symptoms

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ABSTRACT

Background: Brain imaging in psychiatry, especially by first-episode psychiatric symptoms, is unfortunately not a standard procedure in psychiatric clinics and is recommended only if indicated by history or if associated with neurological findings. As a result, the most serious diagnoses can be delayed or missed.

Case Description: We describe a patient who presented with psychiatric symptoms admitted initially to a psychiatric clinic. Thanks to routine imaging the diagnosis of a brain tumor could be made with prompt transfer to neurosurgery.

Conclusion: Brain imaging should be a mandatory procedure upon admission to a psychiatric clinic also in patients who present with exclusive psychiatric symptoms.

Keywords: Brain tumor, Diagnostic work-up, Imaging, Neurology, Neurosurgery, Psychiatry

INTRODUCTION

Structural brain imaging in psychiatry even with first onset psychiatric symptoms remains controversial. Psychiatric diagnostic work-up varies between clinics, and brain imaging is not always part of the standard procedure. One reason for this could be that psychiatric diseases, in contrast to neurological disorders, usually cause no structural brain changes visible on standard imaging.^[4] Imaging in psychiatry is more often used in a research setting. However, it is known that structural brain alterations, for example, tumors, can cause any kind of psychiatric symptoms, albeit tumor location does not consistently relate to psychiatric symptomatology.^[5] A plethora of psychiatric symptoms due to brain tumors was reported such as mood disorders, cognitive impairment, psychosis, depersonalization, and apathy;^[5] yet, brain imaging is presumed to be only indicated when psychiatric symptoms are associated with neurological deficits.^[2] However, this line of reasoning neglects the fact that psychiatric symptoms can be the sole manifestation of brain alterations. Omitting brain imaging on admission after new-onset psychiatric symptoms can delay or miss the diagnosis of an underlying organic cause, which may have catastrophic consequences. McClellan *et al.*^[6] studied the results of brain imaging (computed tomography [CT]) in 261 patients with a variety of psychiatric diseases yet without focal neurologic deficits. In 230 patients, CT scans revealed no cranial anomalies, 27 patients showed only cortical atrophy, and in four patients, the findings were unrelated to their psychiatric condition. The authors

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suggested that in psychiatric patients, the absence of focal neurologic deficits or other symptoms indicating intracranial abnormality, no justification for routine CT imaging is given. Andrea *et al.*^[2] conducted a study of 443 subjects with first episode psychosis and without focal neurologic findings, and found that brain imaging did not yield diagnostic information that assisted in clinical management, and therefore, it should not be recommended. Brain imaging is recommended by the American Psychiatric Association's Guideline for the Treatment of patients with Schizophrenia in first episode psychosis when indicated by the history or neurological examination.^[1]

CASE REPORT

We saw a 22-year-old man who had been complaining of dreamlike states for 6 months, associated with philosophical questions about the sense of existence. He described these derealization states as frightening, and as being accompanied by avolition, a depressed mood, and concentration deficits. The patient was admitted to a psychiatric hospital, and a mild-to-moderate depression in the context of an adolescent crisis was suspected. A pharmacological treatment with lorazepam 0.5 mg twice daily and bupropion initially 150 mg titrated up to 300 mg was initiated. The patient improved under the pharmacological treatment. On admission, no apparent focal neurological deficit was detected. As part of a further clinical diagnostic work-up, a routine magnetic resonance imaging (MRI) of the head was performed, which revealed a partially contrast enhancing space-occupying compressive lesion at the roof of the fourth ventricle, with a nodular hypervascular component [Figures 1a and b]. This was thought to be an accidental finding. Furthermore, a cerebellar tonsil herniation through the foramen magnum with discrete compression of the medulla oblongata was apparent. The patient was promptly transferred to the neurosurgical unit, and a suboccipital craniotomy with tumor resection was successfully performed. Histopathological examination revealed both a rosette-forming glioneuronal tumor and a papillary glioneuronal tumor, corresponding to a World Health Organization Grade I (benign) tumor. Postoperatively, depression and derealization almost completely resolved, and the postoperative MRI displayed complete tumor resection and decompression of the foramen magnum [Figures 1c and d]. By means of a stationary rehabilitation program, the neurocognitive deficits and apathy improved as well.

DISCUSSION

Our case and other published reports^[5] stress the importance to reflect whether routine brain imaging should be implemented in the initial psychiatric diagnostic work-up at the first onset of a psychiatric disease. In our opinion, this is

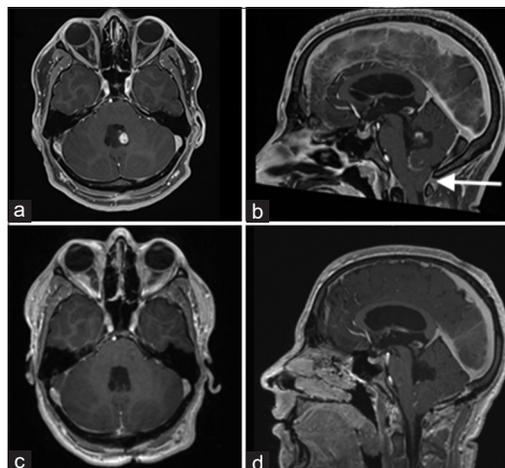


Figure 1: (a-d) Gadolinium-enhanced, T1-weighted MRI (a: axial, left panel; b: mid-sagittal, right panel) shows a cerebellar, partially nodular lesion at the roof of the 4th ventricle with consecutive tonsillar herniation (arrow) and beginning compression of the medulla oblongata. Postoperative MRI confirms (c: axial, d: sagittal) complete resection of the benign tumor and decompression of the foramen magnum.

in the very best interest of every single patient, even though a majority of patients with psychiatric symptomatology has normal brain imaging findings. Our patient would have risked severe brain stem compression and death without the routine MRI performed in the psychiatric clinic. Likewise, it should be considered that patients admitted to a psychiatric facility with predominant psychiatric symptomatology might also present with subtle neurological deficits, which can be missed on admission. Linking the decision of imaging to pharmacological response bears the risk that medications may well improve the symptomatology, deflecting potentially from an underlying organic cause. Our patient by way of example improved with medication, but it was thanks to the routine imaging on admission that the tumor was detected and treated timely. Within this context of refining diagnostic work-up on admission, one may also consider performing an electroencephalogram in addition to imaging.

CONCLUSION

As brain tumors can manifest only with psychiatric symptomatology, it is advisable performing imaging in patients also with a predominant or exclusive psychiatric presentation.^[5] Caruso and Piro^[3] called, rightly so, their case series “*Why in the age of CT scans and MRIs is a brain tumor mistaken for a psychiatric illness?*”

Authors' contributions

C. Saleh: Clinical examination, wrote the first draft, and revised critically the final draft. U. Seidl: Drafted the

manuscript and revised critically the final draft. G. Hutter: Performed surgery, drafted the manuscript, and revised critically the final draft. M. Hund-Georgiadis: Clinical examination, drafted the manuscript, and revised critically the final draft.

Data availability statement

All data analyzed for this case report are included in this article and its supplementary material files. Further enquiries can be directed to the corresponding author.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. American Psychiatric Association. The American Psychiatric Association Practice Guidelines for the Psychiatric Evaluation of Adults. 3rd ed. Arlington, VA: American Psychiatric Association; 2016.
2. Andrea S, Papirny M, Raedler T. Brain imaging in adolescents and young adults with first-episode psychosis: A retrospective cohort study. *J Clin Psychiatry* 2019;80:18m12665.
3. Caruso R, Piro A. Why in the age of CT scans and MRIs is a brain tumour mistaken for a psychiatric illness? *BMJ Case Rep* 2017;2017:bcr2017220131.
4. Khandanpour N, Hoggard N, Connolly DJ. The role of MRI and CT of the brain in first episodes of psychosis. *Clin Radiol* 2013;68:245-50.
5. Madhusoodanan S, Ting MB, Farah T, Ugur U. Psychiatric aspects of brain tumors: A review. *World J Psychiatry* 2015;5:273-85.
6. McClellan RL, Eisenberg RL, Giyanani VL. Routine CT screening of psychiatry inpatients. *Radiology* 1988;169:99-100.

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