

Manic episode revealing a pituitary adenoma: From a clinical case and literature review

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Abstract

Pituitary adenomas are common intracranial tumors, yet psychiatric manifestations as presenting symptoms remain uncommon and often overlooked. We report the case of a 37-year-old man with no prior medical or psychiatric history who initially presented with a rapidly progressive manic episode with psychotic features. Clinical deterioration, including cognitive impairment and confusion, prompted neuroimaging, which revealed a non-secreting pituitary macroadenoma. The patient underwent transsphenoidal surgery, followed by significant improvement in mood stability and cognitive functioning. This case highlights the potential for pituitary adenomas—particularly non-secreting types—to manifest primarily through psychiatric symptoms due to mass effect or secondary hormonal dysfunction. Early recognition of atypical psychiatric presentations is critical to avoid diagnostic delay and ensure appropriate multidisciplinary management. A brief review of the literature is provided to contextualize the association between pituitary tumors and psychiatric manifestations

Keywords: Pituitary adenoma; Manic episode; Psychiatric symptoms; Mass effect; Hypopituitarism; Neuroendocrinology; Transsphenoidal surgery

1. Introduction

Psychic symptoms constitute the initial disorders in 25% of malignant brain tumors. In the case of pituitary adenomas, several psychiatric manifestations may be revealing or complicate the evolutionary course of the disease and its treatment.

Pituitary adenomas can lead to a wide range of psychiatric manifestations, including depressive syndromes, psychoses, personality disorders and, more rarely, manic episodes. These symptoms may result either from hormonal imbalances caused by the tumor or from its mass effect on adjacent brain structures. The relationship is complex, as psychiatric symptoms may sometimes constitute the initial presentation of the adenoma, leading to diagnostic delay, or coexist with a pre-existing psychiatric disorder, complicating diagnosis and treatment.

2. Clinical case

We will describe the case of a 37-year-old young man, without any notable medical or psychiatric history, monitored as an outpatient for chronic headaches with tendencies to resist usual analgesics. The patient was hospitalized in a psychiatry department following a state of agitation with verbalization of incoherent statements made of delusional ideas of grandeur and persecution, all evolving for almost 10 days (rapidly progressive) in a context of almost total

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insomnia and increased cannabis consumption. The diagnosis of a manic episode with mood-congruent psychotic features was retained, and a mood stabilizer was initiated. The evolution was quickly marked by the worsening of mood, memory, and attention disorders, then by the appearance of ideomotor slowing and confusional elements as well as vigilance disturbances.

A brain MRI was performed, showing a pituitary adenoma (figures 1, 2 and 3) most likely evolving for several months in an insidious manner. The hormonal assessment revealed the non-secreting nature of the adenoma. The patient was then transferred to a neurosurgery department where he underwent surgery (transsphenoidal surgery), and was reviewed 4 months later with stabilization of his mood and a better response to treatment.



Figure 1, 2 and3: Magnetic resonance imaging (MRI) in T1 uncontrasted sagittal section (1), coronal T1-weighted image after contrast injection (2), and T2 uncontrasted axial section, showing a pituitary adenoma with preservation of the carotid siphons and cavernous sinuses, and superior compression of the optic chiasm.

3. Discussion

Pituitary tumors represent 10% of all intracranial tumors and are most often discovered between 35 and 65 years of age. Pituitary tumors are frequent, but symptomatic tumors are rare (prevalence 0.02 to 0.05%). [1]

From a histological point of view, these tumors are generally benign, rarely malignant. Two major categories are classically distinguished:

- Secreting adenomas, which lead to a hormonal hypersecretion syndrome depending on the hormone produced (for example ACTH, prolactin, growth hormone, etc.);
- Non-secreting adenomas, which are often discovered late, when they have become large macroadenomas, revealed by symptoms related to their volume: visual disturbances, headaches, or panhypopituitarism.

The frequency and intensity of psychiatric manifestations seem to be associated with rapid growth and large tumor volume, and with the presence of intracranial hypertension. [1]

Indeed, studies have shown that in some patients, large adenomas exert a mass effect on brain structures, particularly the hypothalamus and pituitary stalk, which can cause neurological and psychiatric symptoms.[2] This mechanical effect can disrupt neural circuits involved in the regulation of mood, behavior and cognition, which explains why some patients develop psychiatric disorders even in the absence of hormonal hyperproduction. [3]

A first manic episode may constitute a rare but significant initial symptom of a pituitary adenoma, particularly in Cushing's disease. [4, 5]

This may delay the diagnosis of the tumor, highlighting the need for clinicians to consider underlying endocrine causes during new or atypical psychiatric presentations. [6]

For non-secreting pituitary adenomas, psychiatric symptoms are less frequent and are generally related to the local mass effect of the tumor rather than to a primary hormonal imbalance:

- **Mass effect:** The tumor can compress surrounding structures, leading to disruption of neural circuits involved in the regulation of mood, behavior and cognition, hence neurological and psychiatric symptoms. Tumors of the pituitary stalk, for example, are often associated with hypothalamic involvement, which may cause behavioral disorders. [2] [6]
- **Hypopituitarism:** Although these adenomas do not secrete active hormones, their growth can compress and damage normal pituitary tissue, leading to deficiencies in one or more pituitary hormones (hypopituitarism). The resulting hormonal imbalances (for example, secondary hypothyroidism or adrenal insufficiency) may then cause psychiatric symptoms similar to those of primary endocrine disorders. [6]

4. Conclusion

Although several studies report cases and series, there is a lack of large prospective studies that systematically assess psychiatric symptoms in patients with pituitary adenoma, distinguishing the subtypes (secreting vs non-secreting, micro- vs macroadenomas).

The exact mechanisms linking the tumor to psychopathology remain unclear: is it mainly the hormonal effect (hyper- or hypo-secretion), mechanical compression, or structural/neural alterations? Research on the tumor microenvironment could shed further light on these processes.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from the patient.

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