Psychosis secondary to meningioma. Review Regarding A Case

Secondary Psychosis Due To Meningioma. Review About A Case

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Meningiomas are the most frequent central nervous primary tumors, which tend to be benign and present a slow growth. They may be asymptomatic or present clinically just with psychiatric symptoms including a psychotic state. There are no clinical randomized controlled trials that study the relationship between meningioma and a psychotic episode. Available evidence is based on case reports and series. There is a relationship between the magnitude of perilesional edema and the presence of psychotic symptoms. On the other hand, the size of the tumor or its specific neuroanatomic location would have less relevance. Surgical resection of the tumor associated with psychiatric management usually leads to the cessation of psychotic symptoms. In the assessment of patients with psychotic symptoms, there must be a high index of suspicion, particularly in first psychotic episodes, atypical manifestations and resistance to treatment. In these cases, a neuroimaging study is recommended. This article presents the case of a patient evaluated in our hospital and diagnosed with a large left frontal meningioma with secondary psychotic symptoms, and an updated bibliographic review of this association is presented.

Key words: *meningiomas, brain tumors, psychosis*
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Introduction

Meningiomas are the most frequent primary tumors of the central nervous system, and they can manifest clinically at first only with psychiatric symptoms. In this review, the Clinical case of a patient who presented a left frontal meningioma with psychotic manifestations, with the aim of better understanding the psychiatric manifestations that this type of tumor can present, as well as its study, prognosis and eventual therapeutic strategies.

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Case report

A 43-year-old female patient with no personal medical or psychiatric history.

A three-year clinical picture characterized by fatigue, decreased energy, weakness in both lower limbs and demotivation in their usual activities. Then it begins with behavioral alterations that become noticeable both for the patient and for those close to her, where social isolation stands out, ceasing to share with friends and family. Despite maintaining her work activity, when she arrived home, she tended to remain locked in her room, helping only with minimal household chores.

Later he becomes irritable, both at work and with family and friends.

After a year of evolution, polymyalgae and bilateral gonalgia were added, for which the patient consulted a general practitioner, making the diagnosis of fibromyalgia. He began treatment with nonsteroidal anti-inflammatory drugs with poor response, then abandoned his treatment.

After two years of evolution, there is a progressive decrease in bilateral visual acuity. Six months later he began to neglect his personal hygiene and to accumulate trash in his room, to the point that it was difficult to wander around it. This was striking to her close ones, since she was previously very careful with cleanliness and cleanliness. At that time, some erroneous answers were evident on the part of the patient to trivial questions, such as her age, or the date of her son's birthday. He also had unmotivated laughter, occasionally kinesthetic hallucinations, in which he described that he was trembling. When she told her relatives about this situation, and they denied this assertion, she was perplexed without questioning what she perceived.

Her family took her to consult doctors of different specialties, without obtaining a clear diagnosis. She was kept on labo- ral rest for more than 6 months with the diagnosis of fibromyalgia.

Two weeks before her admission to the Institute of Neurosurgery, she began with delusions of harm and harm, in which she stated that her father wanted to poison her with decomposed milk and that the garbage accumulated in her room influenced her through "energies". In addition, she presented a visual hallucination of a man in black who accompanied her permanently. These situations generated intense anguish in her since she had the feeling that they could hurt her. Despite the symptoms previously reported, the patient was taken to the clinic due to a considerable worsening of visual acuity. In ophthalmological evaluation, papilledema was detected, magnetic resonance imaging (MRI) of the brain was requested, which reported an extra-axial mass of the base of left frontal dural implantation, 7.7x6.7x5.5 cm in diameter, which conditions an important effect of mass on adjacent structures, with displacement to the right of the structures of the midline, subfalcine herniation, obliteration of the local convexity grooves and collapse of the frontal horns of the lateral ventricles. with deformity and compression of the anterior portion of the body

callosum (Fig. 1 and 2)

Given this finding, she was transferred to the Institute of Neurosurgery, where she was evaluated and later a complete resection of the expansive process and the dural implantation margins was performed. The pathological report reported findings consistent with an atypical meningioma, WHO grade II.

Given the persistence of psychotic symptoms after surgery, management with haloperidol was performed

4 mg a day for 7 days and then gradual withdrawal. He evolves with a good from

Figure 1. Magnetic resonance imaging axial and coronal brain section T2 SE sequence, there is evidence of a great effect of mass on the left and right frontal lobe. In addition to major perilesional edema in the left frontoinsular region.

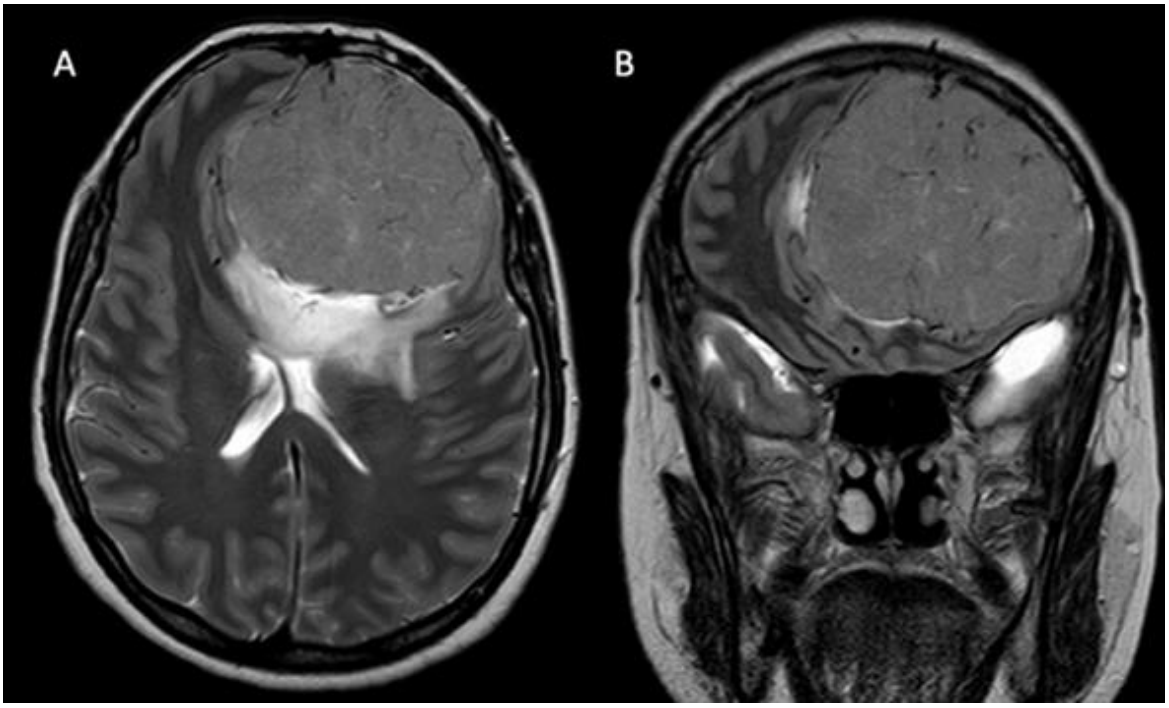
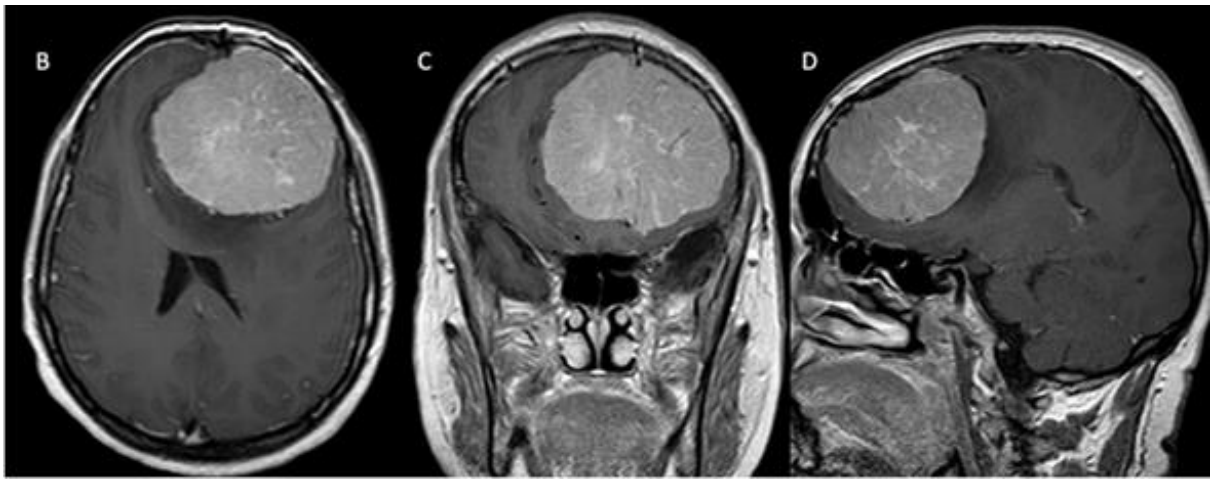


Figure 2. Magnetic resonance imaging axial, coronal and sagittal brain section. T1 sequence with gadolinium, which demonstrates left frontal extraaxial lesion with homogeneous enhancement after contrast administration.



Significant symptomatology in controls Further.

LITERATURE REVIEW

Meningiomas

A brain tumor is a mass of abnormal cell growth that can present with a wide variety of symptoms. They can be classified according to their histopathological characteristics or anatomical location. If the origin of the tumor comes from brain tissue, they correspond to primary brain tumors, and if they present as brain metastases from tumors of other body tissues, they correspond to secondary brain tumors. Primary brain tumors that originate from glial cells are called gliomas, which include astrocytomas, oligodendrogliomas, and ependymomas. Brain tumors that do not come from glial tissue include meningiomas, schwannomas, craniopharyngiomas, germ cell tumors, pituitary adenomas, and tumors of the pineal region.[1]

Meningiomas are the most common primary tumors of the central nervous system, accounting for approximately 37%, with an annual incidence of 7.61 per 100,000 individuals[2]

Meningiomas are extra-axial intracranial tumors that originate in the meningotelial cells of the arachnoid[3][4][5]. Meningiomas can be found arising from any dural surface, intracranial, or spinal. They can develop anywhere where arachnoidal cells are present, with parasagittal (20.8%), cerebral convexity (15.2%) and sellar tubercle (12.8%) locations being more frequent. Parasagittal meningiomas most often occur in the frontal lobe.[5]

They occur more frequently in women, with a frequency of 2-4:1 compared to men and the incidence increases with age. Other risk factors are the presence of neurofibromatosis type 1 and type 2, as well as exposure to ionizing radiation[6]. Its peak incidence is at 45 years and the average age of diagnosis is 65 years. The risk increases with age, although by 1.5
% occur in childhood and adolescence, generally between 10 and 20 years of age and are associated with neurofibromatosis type 1.[7].

Meningiomas generally correspond to solitary, benign, circumscribed and slow-growing lesions. They can be multiple in approximately 8% of cases, this finding being more frequent in patients who present neurofibromatosis. Many are discovered incidentally on neuroimaging. Although they do not have a pathognomonic presentation, typical symptoms are headache due to increased intracranial pressure, focal neurological deficits, or seizures caused by mass effect.[8] Papilledema and homonymous hemianopia were characteristic features of advanced meningiomas at the anterior parasagittal level.[5]

MRI imaging is often sufficient to make the diagnosis. The frequency of meningiomas is probably underestimated, since systematic MRI examination showed that the prevalence of undiagnosed meningiomas is 0.5% in subjects aged 45 to 59 years and 1.6% after 75 years[9] According to the WHO histopathological classification[10] 94% are grade I (typical), 4% grade II (atypical), and 1% corresponds to grade III (anaplastic).[11]

Psychiatric presentation in brain tumors

Metastatic brain tumors may be associated with a higher incidence of psychiatric symptoms than

primary brain tumors, most likely due to the diffuse distribution of metastases in the brain parenchyma[12].

Between 50 and 78% of patients with brain tumors present psychiatric manifestations.[13][14]. However, in the study by Keschner et al., taking a sample of 530 patients affected by a brain tumor, only 18% presented psychiatric symptoms as the first clinical manifestation.[14] A change in mental status may be the first sign in approximately 15-20% of patients with a brain tumor, which may present as a personality change, emotional disturbances, or intellectual deficit.[15]

Some old studies report that there is no relationship between tumor histology and psychiatric symptomatology.[14] This has been corroborated by more recent studies, which report that 44% of patients with brain tumors have affective symptoms regardless of tumor histology[17].

Some studies show that psychiatric symptoms may depend on the location of the tumor[18]. Frontal and temporal brain tumors tend to cause greater psychiatric symptoms than parietal or occipital tumors.[15] A tumor in the dorsolateral prefrontal region tends to produce executive dysfunction, at the orbitofrontal level, it tends to generate disinhibition. A tumor in the medial frontal region can lead to apathy or apathy[18] and temporal limbic tumors can present with psychosis.[19] There is an association between anorexia and hypothalamic tumors; a possible association between psychotic symptoms and pituitary tumors; cognitive symptoms and thalamic tumors; and affective symptoms and frontal tumors.[18] Psychotic symptomatology in brain tumors tends to be of visual preference, and with greater

Often with simple rather than complex characteristics[20] Madhusoodanan et al. point out that affective symptoms are the most common, they have been reported in 36% of cases, while psychotic symptoms in 22% of patients. In the cases of patients who presented psychotic symptoms, many of them had pituitary tumors. In another study, temporal lobe tumors were mostly related to psychotic manifestations.[18] The fact that tumors in the same brain locations can cause similar psychiatric symptoms suggests that they are altering relatively specific connections within the cerebral cortex.

Meningiomas are tumors of the meninges and not of the brain parenchyma, however, they can affect the cortex creating a mass effect, which can disrupt connectivity within and between cortical lobes, and therefore, can cause these documented psychiatric symptoms.[21] Peritumoral edema has also been proposed as the cause of this interruption in brain neuronal connectivity[22] In this sense, there is evidence that alterations in corticothalamic connectivity may be related to the appearance of psychotic symptoms. However, it has not been possible to identify which specific corticothalamic circuits would be involved.[23] There would be a bidirectional relationship between psychiatric pathology and brain tumors. In this sense, patients with psychiatric pathology have up to 10 times the frequency of brain tumors[24] Along the same lines, a study showed that one in 323 psychiatric patients who underwent a brain CT scan had a brain tumor.[25]

Meningiomas and general psychiatric symptoms

Meningiomas may be clinically

silent or can only present with psychiatric manifestations that were not previously found. In this sense, it has been seen that 21% of meningiomas present psychiatric symptoms in the absence of neurological symptoms. Affective symptoms would be the most frequent and there would be no correlation between the laterality of the tumor and psychiatric manifestations.[26] In other I am a student Psychiatric conditions were diagnosed in 44% of convexity meningiomas[27]. Headache papiledema or neurological signs Focal to small arise only when the meningioma has reached a stage outpost.[22] The Psychiatric changes attributed to meningiomas include depression anxiety [illegible][26] [18] [29] Meningiomas that compress the frontal lobes from the outside may not produce any symptoms or a progressive change in personality and intellectual functions only when they reach a large size.[18] The intensity and course of symptoms will depend on the time of evolution of the tumor and its speed of development. growth.[30]

Gyawali et al. in 2019 conducted a review on meningiomas and psychiatric symptoms, where they analyzed 48 studies corresponding to case reports, case series (maximum of 3 cases) and letters to the editor, giving a total of 52 cases. They found that the most frequent location of the tumor was the frontal lobe with approximately 30 cases. The most frequent symptoms reported for frontal meningiomas were depressive symptoms. Right frontal meningiomas were associated with bipolar disorder, alcohol abuse, and musical and visual hallucinations. Capgras and Anton syndrome were also described in frontal tumors. A case of olfactory sulcus meningioma involving both frontal lobes presented symptoms of affective flattening, apathy, decreased self-care for 3 years, which was initially diagnosed as schizophrenia. A right temporoparietal meningioma was associated with depressive symptoms and subsequently developed a picture compatible with an acute schizomorphic syndrome. Similarly, the right parasagittal region of the parietal lobe was associated with schizophreniform psychosis.[1]

Psychosis

The term "psychosis" still lacks a unified definition, but it denotes a syndrome composed of several symptoms[31]. Psychotic symptoms are common and disruptive of many psychiatric, neurodevelopmental, neurological and medical conditions; and an important objective of evaluation and treatment in neurological and psychiatric practice.[32] The definition and characterization of the concept of psychosis is complex and has changed over time[33], since it was first used by the Austrian physician Ernst von Feuchtersleben in 1845.[34] In the first editions of the American Psychiatric Association's (APA) Diagnostic and Statistical Manual of Mental Disorders (DSM), psychosis was broadly defined as "severe alteration in the reality test" or "loss of the boundaries of the self" that interferes with the ability to meet the ordinary demands of life.[35]

For other schools, such as the German school, the definition of the characteristic symptoms of psychosis was related to the level of severity (psychosis being the most severe form of mental disorders), lack of insight, thought disorders, incomprehensibility of symptoms and reduced social adaptation.[31]

In current classification systems diagnosis, both of the APA and the

World Health Organization (WHO) alteration in the reality test remains conceptually central to psychosis. Unlike previous diagnostic classification systems, efforts have been made to operationalize this alteration[32]. In this regard, in the DSM-5, the chapter "Spectrum of schizophrenia and other psychotic disorders" states that these disorders are defined by abnormalities in one or more of the following five domains: delusions, hallucinations, disorganized thinking, disorganized or abnormal behavior (including catatonia), and negative symptoms.[36] It is not yet possible to determine the exact mechanisms at work in individual cases of psychotic manifestations. Therefore, psychosis is still defined by the clinical picture and not by laboratory, genetic, or neuroimaging investigations.[31]

Meningiomas and psychosis

Meningiomas located in the right parietal lobe, pineal gland, lateral ventricle, and bilateral occipital lobe have been found to be associated with psychosis.[18]
[37] Likewise, at the medial temporal level, specifically, hippocampal complex, parahippocampal gyrus, amygdala, and superior temporal gyrus, preferably at the left level[38] [39][40][41]. Regarding lateralization of the lesion, right frontal meningiomas are associated with psychiatric symptoms more frequently than those on the left side.[22] Right parietal meningioma in particular has been linked to paranoid delusions and hallucinations.[37] Meningiomas of cerebral convexity have been associated with delusional symptoms.[22][42] It has been seen that perilesional compression and edema of the right temporal lobe caused by meningiomas in this location has been associated with loss of facial recognition and familiarity as well as delusions and aggressive behavior, similar to Capgras syndrome.[43] It has been seen that there is no relationship between the volume of the meningioma and psychotic symptoms, but such an association has been seen between the volume of perilesional edema and these symptoms.[22] However, the mechanisms by which meningioma produces such psychotic symptoms remain unclear.
[21]

Regarding treatment, there is some evidence based on case reports regarding the use of olanzapine in low doses to reduce psychotic symptomatology in this group of patients, which would be safe and with good rates of effectiveness[44]

According to the case review conducted by Gyawali et al, the treatment of the patients consisted of total or partial resection of the meningioma together with the treatment of psychiatric conditions with the use of antidepressants, antipsychotics and anticonvulsants. Usually with the resection of the tumor, the psychiatric manifestations subsided, and often did not require continuing with psychopharmacological treatment. However, some case reports described a new appearance of psychiatric symptoms after tumor resection. Most case reports are not clear in specifying whether or not psychotropic agents were still indicated after tumor resection.[1]

DISCUSSION

There is little evidence regarding the relationship between meningiomas and psychotic symptomatology, being predominantly based on reports and case series. There are no double-blind randomized controlled clinical trials for this clinical association.

We think that this low level of evidence may be due to the loss of continuity between the psychiatric history of the case and then its surgical resolution. Probably in the case that a psychiatrist as part of the study of an episode

psychotic, request a neuroimage that shows a brain tumor as a finding, he will immediately refer to a neurosurgery team. The latter will discuss the best way to remove the tumor and proceed. The priority of surgically intervening in a case such as the one presented by us, relegates to the background the study of the form of presentation of psychiatric symptoms in time and the manner in which the diagnosis was reached.

The case presented by us is exceptional, as it shows a young patient with a left frontal meningioma and psychotic symptoms. This case is highly suggestive of a relationship between meningioma and the manifestation of psychosis, considering that surgical resolution resulted in an evident clinical improvement of the condition, in which the use of a dopaminergic antagonist drug probably acted as an adjuvant.

In view of the above, it seems to us that this work can add to the body of evidence that indicates that meningiomas can present with psychotic symptoms.

It is not clear why a particular patient with a left frontal meningioma might remain asymptomatic, present psychotic symptoms, or other types of psychiatric manifestations. However, we believe that perilesional edema, the mass effect caused by the tumor or the interruption of corticothalamic pathways may be involved in this manifestation.

With respect to the associated symptomatology, psychotic symptoms in the presence of brain tumors would not have localizing value for the lesion in specific neuroanatomical regions.

The psychiatric symptoms present are not related to the histopathological type of the tumor.[18] Therefore, the presence of a meningioma would not manifest differently from other types of brain tumors Primary.

There is no information available that relates the size of the tumor with the severity of the symptoms. However, there would be a directly proportional relationship between the cerebral edema generated by the tumor and the severity of psychiatric symptoms.[22] Some subtle neurological signs that may be found prior to or in conjunction with psychiatric manifestations are: apraxia, visual field deficits, and anomia. Then personality changes, sleep disturbances, apathy, weight loss, anorexia, and lack of concentration may occur. Subsequently, a psychiatric picture may be configured that does not easily coincide with the existing categorical diagnostic manuals, as well as atypical, refractory or recurrent symptoms.[18]

We agree with Madhusoodanan et al, in the sense of having a high index of suspicion and requesting a neuroimaging study in the event of a new psychotic episode, memory loss of recent onset, appearance for the first time of anxiety-depressive symptoms in older adults. Also, in the face of the appearance of atypical symptoms, personality changes and anorexia without dysmorphic symptoms such as alteration of body self-image. We would like to add the suggestion of performing neuroimaging in the case of patients who present a torpid evolution or resistance to the indicated psychiatric treatment despite good adherence and compliance with the indications given.

It is important to raise the need for a joint approach by the different specialties, seeking an adequate connection between the different specialists. The need for teamwork and feedback regarding the referrals or interconsultations made is relevant.

We believe that it would be desirable that in the training programs of doctors

These topics are addressed in an optimal way, mainly with regard to psychiatric presentations of neurosurgical conditions.

There are no randomized, double-blind studies on the treatment of psychotic symptoms in meningiomas. More research is required to have a higher level of evidence, as there are still many questions to be resolved. For example
Do I need to continue treatment? psychopharmacological after tumor resection, and if so, for how long?

In conclusion, it is essential that in the event of a first psychotic episode or atypical presentation of a psychiatric condition, a neuroimaging study is requested. In this way, in case of investigating a brain tumor, there is a greater probability of achieving an early diagnosis and timely neurosurgical treatment, together with psychiatric treatment if necessary.