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Meningioma and Pregnancy: About a Case with an Unfavorable Maternal and Neonatal Outcome at Souro Sanou University Teaching Hospital, Burkina Faso

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Abstract

Introduction: Intracranial tumors associated with pregnancy are rare and represent a major diagnostic and therapeutic challenge. Meningioma is the most common benign primary brain tumor in women of childbearing age. Its symptoms can worsen during pregnancy due to hormonal and hemodynamic changes, exposing them to severe neurological complications. **Observation:** We report the case of a 34-year-old patient, G3P2, 28 weeks pregnant with amenorrhea, admitted for intense headache, vomiting, visual disturbances and focal neurological deficit. Brain imaging revealed an intracranial meningioma complicated by hydrocephalus. The patient had benefited from a ventricle-peritoneal shunt thus allowing the improvement of symptoms. Despite initial clinical improvement, the course was marked by neurological worsening at 32 weeks of amenorrhea. An emergency fetal extraction by caesarean section under general anesthesia was performed. The newborn died secondarily in a context of respiratory distress and prematurity. The patient underwent tumor resection after the postpartum period and the outcome was unfavorable. **Conclusion:** Pregnancy-associated meningioma is a rare but potentially serious condition. Early diagnosis, close neurological monitoring and individualized multidisciplinary management are essential to improve maternal and fetal prognosis. This observation underlines the heavy morbidity and mortality linked to this association.

Keywords

Meningioma, Pregnancy, Brain Tumor

1. Introduction

Meningiomas are the most common primary intracranial tumors, with a frequency of about 30% - 40% of benign brain tumors [1]. In the literature, a female predominance has been described [1]. This suggests the involvement of hormonal factors in their pathophysiology [1]. Although most meningiomas are benign and develop slowly, remarkable cases of accelerated tumor growth during pregnancy have been reported, associated with the presence of hormone receptors, particularly progesterone, on tumor cells [2].

The association of a meningioma with pregnancy is a rare case; some authors report a frequency of 0.001%, but this association is clinically significant [3].

Diagnosis may be delayed or misdiagnosed because neurological symptoms (headache, dizziness, vomiting, focal deficits, and seizures) may be attributed to classic manifestations of pregnancy or pregnancy-related complications such as preeclampsia or eclampsia [4].

Systematic reviews and case series indicate that pregnancy can influence the course of meningiomas due to hormonal and hemodynamic changes, sometimes leading to rapid tumor growth or increased peri-lesional edema, requiring multidisciplinary management [5].

In our context of resource-limited countries, delayed access to brain imaging and the scarcity of local data on the management of meningiomas during pregnancy further complicate clinical management. Recent clinical reports, including cases documented in African contexts, emphasize the importance of early diagnosis, coordination between obstetrician-gynecologists, neurosurgeons, neonatal pediatricians, and intensive care anesthesiologists for adaptation of therapeutic strategies [6] [7].

The management of cerebral meningiomas during pregnancy remains complex and non-consensual. It is based on a multidisciplinary evaluation integrating gestational age, the severity of neurological signs, tumor location and the risks associated with surgical or anesthetic interventions. The choice between a conservative attitude, symptomatic medical treatment, emergency or deferred neurosurgery, and planning of the period and route of delivery requires consideration of maternal complications and fetal viability [6] [7]. It is in this context of multidisciplinary management that we report the case of a patient with a meningioma associated with pregnancy, whom we followed and managed, followed by a review of the literature in order to better understand the epidemiological, diagnostic, therapeutic and maternal and fetal outcomes aspects of this rare association.

For ethical reasons, written informed consent for the publication of this case report and the associated data was obtained from the patient's next of kin. The patient's identity was protected to ensure confidentiality.

2. Clinical Observation

We report the case of a 34-year-old patient, G3P2, mother of two living children, who consulted at the Department of Gynecology-Obstetrics and Reproductive Medicine of the Souro Sanou University Hospital Center (CHU-SS) of Bobo-Dioulasso.

2.1. History and History of the Disease

The patient had been presenting for several months with progressive neurological symptoms marked by headache, dizziness, vomiting, visual disturbances and relative functional impotence of the lower limbs, which occurred during a progressive pregnancy. Faced with the progressive worsening of the symptoms, she was referred to a neurosurgery consultation.

The exacerbation of headaches, associated with uncontrollable vomiting and decreased visual acuity, led to a brain computed tomography (CT) scan, which suggested the diagnosis of an intracranial expansive process complicated by hydrocephalus. Initial neurosurgical management consisted of the placement of a ventriculoperitoneal shunt on July 24, 2025, with a transient regression of symptoms.

Close monitoring of the pregnancy, combined with regular neurosurgical consultations, has been instituted. However, the patient presented a progressive recurrence of headaches, a further decrease in visual acuity, vomiting and an alteration in general condition, motivating her admission to the gynecology-obstetrics department of the CHU-SS for better care.

2.2. History of Pregnancy

It was a spontaneous pregnancy. The date of the last menstrual period was February 13, 2025, corresponding to a term of 12 weeks of amenorrhea (WA) + 1 day on May 9, 2025.

The obstetric ultrasound performed on August 11, 2025 showed a progressive single-fetal pregnancy of 25 weeks + 1 day, with no detectable fetal morphological abnormality.

The patient was on iron and folic acid supplementation and was on intermittent preventive treatment (IPT) against malaria, in accordance with national recommendations.

2.3. Clinical Examination

On admission, the general examination revelated that the patient was conscious but with an altered general condition. Vital parameters were stable: blood pressure at 110/73 mmHg, body temperature at 37˚C.

The obstetrical examination showed a supple abdomen, enlarged in volume in relation to a pregnant uterus, with a uterine height measured at 24 cm. The fetal heart sounds were regular at 130 beats per minute.

Speculum examination revealed a normal-looking cervix and vaginal walls. The

vaginal examination showed a short, centered, dehiscent cervix with intact membranes. The gloves came back soiled with physiological leucorrhea.

The neurological examination revealed left hemiparesis.

2.4. Additional Examinations

Brain CT, supplemented by brain magnetic resonance imaging (MRI) (Figure 1), was in favor of a meningioma complicated by hydrocephalus, confirming the organic origin of neurological disorders. a large intracranial tumor mass developed from the meninges, located at the base of the skull, extending towards the region of the posterior fossa and the supratentorial compartment, along the tent of the cerebellum or clivus, which is strongly raised by up to 6.61 cm, resulting in a significant mass effect on adjacent brain structures.

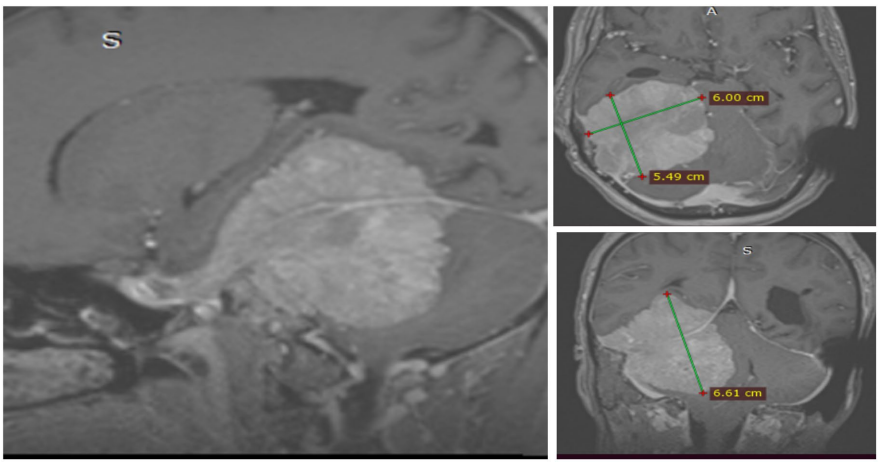

Figure 1. Brain MRI showing a mass measuring 60 × 54 millimeters.

2.5. Diagnosis

The diagnosis was a normally progressing singleton pregnancy at 28 weeks of gestation associated with an intracranial meningioma.

2.6. Management and Evolution

The patient was hospitalized. She benefited from treatment with analgesics, anti-Semitics, close neurological monitoring and systematic search for signs of cerebral involvement. Fetal lung maturation was achieved by administration of injectable betamethasone at a dose of 12 mg, renewed after 24 hours.

A planned fetal extraction had initially been considered at 34 weeks of gestation. A cesarean delivery was scheduled at this gestational age to achieve fetal maturity.

However, after four weeks of hospitalization, *i.e.* at 32 weeks, the evolution was marked by the sudden onset of uncontrollable vomiting, intense headaches and an alteration in the state of consciousness. A multidisciplinary consultation meeting bringing together neurosurgeons, gynecologists-obstetricians and anesthetists-intensive care specialists was organized. The consensus decision was to pro-

ceed with an emergency fetal extraction by caesarean section under general anesthesia.

The caesarean section, performed on September 24, 2025, allowed the extraction through the cephalic pole of a live female newborn, weighing 1730 grams, with an Apgar score of 9, 10 and 10 respectively at the 1st, 5th and 10th minutes. The newborn was transferred to the neonatology department due to prematurity. In the postoperative period following cesarean delivery, the patient received analgesics and standard postoperative care. Mannitol infusion was administered after the cesarean section to reduce cerebral edema.

2.7. Maternal and Fetal Outcomes and Outcomes

The immediate postoperative course in the mother was favorable, with an improvement in general condition and a partial regression of neurological signs. Discharge was allowed on the sixth day after caesarean section.

Given the pregnancy and the associated hormonal influence, tumor resection was scheduled for the postpartum period. Thus, surgical resection of the brain tumor was delayed and performed 45 days after the cesarean section.

It was a success. The patient was admitted to the intensive care unit for close postoperative care and monitoring. The course on the sixth postoperative neurosurgical day was unfavorable, marked by extreme supraventricular tachycardia followed by cardiac arrest. The patient was resuscitated without success. The Histology operative specimen was unavailable .

Concerning the newborn, the evolution was complicated by respiratory distress occurring at the 24th hour of life. The death occurred in a context of prematurity.

Clinical Calendar:

- February 13, 2025: Last menstrual period (start of pregnancy).
- May 9, 2025 (12 weeks + 1 day of amenorrhea): Patient presented with progressive neurological symptoms such as moderate headaches, visual disturbances, vertigo, balance disorders, logorhea;
  - Initial consultation in Oto Rhino Laringology Service, treatment failure;
  - Gynecology consultation, eliminate cerebral malaria, and thyphoid fever;
  - Suspicion of brain tumor, confirmation of cerebral CT and referral to neurosurgery;
  - Pregnancy follow-up every two weeks en Outpatient.
- July 10, 2025 (approximately 20 weeks of amenorrhea): a magnetic resonance imaging was requested and performed The image shows sagittal, coronal and axial cross-sections of a brain magnetic resonance imaging (MRI) showing a meningioma: a large intracranial tumor mass developed from the meninges, located at the base of the skull, extending towards the region of the posterior fossa and the supratentorial compartment, along the tent of the cerebellum or clivus, which is strongly raised by up to 6.61 cm, resulting in a significant mass effect on adjacent brain structures. This tumour compresses nearby brain tissue and cerebrospinal fluid circulation pathways, which explains the presence

of hydrocephalus.

- July 24, 2025 (approximately 24 weeks of amenorrhea): Placement of ventriculoperitoneal shunt to manage hydrocephalus and improve neurological symptoms.
- August 11, 2025 (25 weeks + 1 day of amenorrhea): Obstetric ultrasound confirming progressive single-fetal pregnancy with no morphological abnormalities.
- Around August 2025: Hospitalization for close monitoring, symptomatic treatment, and neurological observation; initiation of fetal lung maturation with injectable betamethasone (12 mg, repeated after 24 hours).
- Initial plan: Scheduled cesarean section at 34 weeks of gestation for fetal maturity.
- September 24, 2025 (32 weeks of amenorrhea): Emergency cesarean section performed due to neurological worsening; live female newborn delivered (1730 g, Apgar scores 9, 10, 10).
- Post-cesarean: Administration of mannitol to reduce cerebral edema; patient received analgesics and standard postoperative care.
- Neonate: Developed respiratory distress at 24 hours of life and subsequently died due to prematurity-related complications.
- 45 days after cesarean (approximately early November 2025): Surgical resection of the meningioma performed postpartum. The Histology operative specimen was unavailable.
- 6th postoperative neurosurgical day: Patient experienced severe complications (supraventricular tachycardia, cardiac arrest) leading to death despite resuscitation efforts.

3. Discussion

The coexistence of a cerebral meningioma and pregnancy is a rare but potentially serious situation, exposing to maternal neurological complications and high perinatal morbidity and mortality [1]. The reported case illustrates the decision-making complexity and limits of care in a context with limited resources.

Meningiomas occur preferentially in women of childbearing age, suggesting a hormonal influence on their development and evolution. Several studies have shown that the majority of meningiomas express progesterone receptors, and that hormonal variations during pregnancy, associated with hypervolemia and sodium retention, can promote rapid tumor growth or increased peritumoral edema [5]. Some authors confirm this exacerbation of neurological symptoms in the patient [4] [8]. These pathophysiological mechanisms explain the neurological worsening observed in some previously asymptomatic patients, such as the case of our patient. These tumors tend to grow slowly; however, pregnancy seems to accelerate this process, causing symptoms, through hormonal mechanisms such as progesterone [5]. Regarding the influence of the tumor on pregnancy, the literature reports an exacerbation of symptoms at the maternal level such as headache, vom-

iting, neurological signs such as motor deficits, and disturbances of consciousness [2] [4] [5]. These signs were found in our patient. Also the evolution of the tumor can be the cause of growth retardation, prematurity [4]. This was the case for the patient presented.

The management of meningiomas associated with pregnancy is uncodified and remains a particular challenge for neurosurgeons and obstetricians. It is based on several parameters, including the severity of neurological signs, gestational age, tumor location and the availability of specialized resources [9]. When maternal neurological status is stable, a conservative approach with close monitoring until fetal viability is usually preferred.

A pregnancy in a patient with a meningioma leads the neurosurgeon to question whether to operate immediately or to wait until the end of the pregnancy. As far as the obstetrician is concerned, the challenge remains the reciprocal influence of the tumor and the pregnancy.

In cases of severe neurological deficit or if the size of the tumor is likely to lead to brain engagement, the procedure is considered an emergency. The difficulty arises in the case of advanced pregnancy, where a risk of fetal harm exists [10]. In our case, the continuation of the pregnancy until 32 weeks of amenorrhea allowed fetal extraction in a context of worsening maternal symptoms.

Vijay M Ravindra and colleagues reported a case of a brain tumor associated with pregnancy that was managed appropriately. The cesarean delivery was performed at 39 weeks of gestation, resulting in a favorable neonatal outcomes [9]. In contrast, in our case, the worsening maternal complications precluded continuation of the pregnancy until fetal maturity, leading to an emergency cesarean delivery at 32 weeks of gestation.

Caesarean section is often recommended in patients with symptomatic meningioma, especially if intracranial hypertension is suspected, to avoid expulsive efforts and the risk of neurological decompensation during labor [11]. This strategy was adopted in our observation.

Despite a satisfactory initial Apgar score, the neonatal course was unfavorable with one secondary death due to respiratory distress. This outcome is mainly linked to prematurity, a major factor in neonatal mortality, particularly in low-income countries where access to effective neonatal resuscitation remains limited [12].

The immediate maternal evolution after delivery was favorable, allowing a delayed tumor resection to 45 days postpartum. This approach is supported by several authors, who recommend, when possible, postponing surgery after childbirth in order to reduce the anesthetic, bleeding, and obstetric risks associated with pregnancy [9] [13]. However, despite surgical management, the subsequent course was marked by the death of the patient.

This adverse outcome underscores the potential severity of pregnancy in patients with meningiomas. The frequency of postoperative complications in settings where neurosurgical intensive care, specialized postoperative follow-up and

follow-up imaging may be insufficient. Factors such as persistent cerebral edema, metabolic disorders, or uncontrolled intracranial hypertension may contribute to late mortality [14].

Several constraints worsen the prognosis of patients with meningioma during pregnancy: delay in diagnosis due to limited access to MRI, clinical confusion with sympathetic signs of pregnancy or other obstetric pathologies such as preeclampsia and eclampsia. Insufficient multidisciplinary coordination, and low maternal and neonatal resuscitation capacity [15]. Published African data remain scarce, which gives case reports particular value in documenting local realities and improving management strategies. However, the main limitation of this study is its descriptive nature based on a single case report. This observation does not allow the generalization of findings or the establishment of universal recommendations. Nevertheless, this case highlights the diagnostic, therapeutic, and prognostic challenges of meningioma during pregnancy in our setting. It also underscores the limited access to specialized imaging and intensive neonatal care.

This case highlights the need for close collaboration between obstetricians, neurologists, neurosurgeons, anesthesiologist and neonatologists, as well as the importance of strengthening health systems. Improved access to brain imaging, specialized neurosurgery, and neonatal intensive care could significantly improve maternal-fetal prognosis in this type of situation.

4. Conclusions

The occurrence of an intracranial meningioma during pregnancy is a rare but serious clinical situation, involving the maternal and fetal prognosis. This observation illustrates the diagnostic and therapeutic complexity of brain tumors in pregnant women. The clinical presentation may be atypical or simulated for certain obstetric pathologies.

Management is based on a multidisciplinary approach involving obstetricians, neurosurgeons and anesthetists, with a rigorous assessment of the benefit-risk ratio for the mother and the fetus.

However, despite appropriate care, the evolution can be unfavorable, as evidenced by the maternal and neonatal mortality observed in this case. This case illustrates the potential severity of this pathological association.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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