

Prolactinoma and Pregnancy Case report

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Abstract

Pregnancy in a patient with a secreting or non-secreting pituitary adenoma is a rare possibility in clinical practice. Management involves of both the consequences of pregnancy on the natural history of pituitary adenoma and the risks to the mother and fetus. We report the case of a patient who was followed for a pituitary adenoma prolactin and admitted to maternity in a clinical syndrome of intracranial hypertension.

Introduction

Pregnancy in a patient with a secreting or non-secreting pituitary adenoma or ante- or post-pituitary insufficiency is a rare possibility in clinical practice. Prolactinomas are the most common pituitary adenomas that cause infertility owing to anovulation. Medical or surgical treatment restores normal fertility in 80 to 90% of patients. During normal pregnancy, estrogens cause hyperplasia of lactotroph cells responsible for hyperprolactinemia and pituitary hypertrophy on magnetic resonance imaging (MRI). Pregnancy in a patient with prolactinoma poses several problems [1,2,3]

Observation

She is a 32-year-old patient followed for secondary infertility by anovulation in relation to a pituitary adenoma of prolactin, put on dopaminergic agonists, 4 months later the patient became pregnant. The Evolution was marked during her pregnancy towards the 18 WA by the installation of a tumor syndrome (headache + decrease in visual acuity), an MRI was performed objectifying a locoregional extension with compression of the optical systems. The patient fell 5 months later at the maternity in labor. With clinical signs of intracranial hypertension (acute installation headache + decreased visual acuity). Examination at admission found a conscious patient GCS 15/15 hemodynamically stable with TA 12/6 FC 75 beats/min SaO₂ 98%. An Indication of extraction by cesarean section under general anesthesia was proposed, allowing the extraction of a newborn Apgar 10/10. The postoperative follow-ups were its particularities. The evolution was marked by the gradual regression of symp-

toms in the days following the birth, afterward, the patient was referred to the endocrinology and neurosurgery services.

Discussion

Prolactinomas are the most common pituitary adenomas and are a cause of infertility by anovulation. They often pose management difficulties because of the consequences of pregnancy on the natural history of pituitary adenoma and the risks they entail for both mother and fetus.

I. The antenatal period

1. Tumor risk related to changes in the volume of adenoma during pregnancy [4]

For microadenomas, the increase in volume during pregnancy is very infrequent with less than 5% of cases (whether during systematic examinations or after the appearance of clinical tumor syndrome). Thus, it may be possible to propose discontinuation of dopaminergic agonists during pregnancy, and quarterly clinical monitoring for a tumor syndrome while monitoring the rate of prolactin is useless. In the absence of the occurrence of clinical tumor syndrome during pregnancy, breastfeeding is allowed. In case of the appearance of a tumor syndrome (headache, visual disturbances), an MRI of the hypothalamic-pituitary region is performed without gadolinium injection. If the adenoma is stable, there are no contraindications to breastfeeding. On the other hand, if there is a significant increase in adenomatous volume during pregnancy, it is possible to resume dopaminergic agonists (bromocriptine), and then breastfeeding is contraindicated. For macroadenomas, the tumor risk is different depend-

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ing on the management prior to pregnancy. In case of medical treatment (most often less than 1 year before achieving pregnancy), there is an increase in the volume of adenoma in 20-30% of cases. In case of prior surgery, the tumor risk is much less frequent, of the order of 5%. for macroadenomas of small size (< 12 mm) or with infrasellar extension, monitoring may be comparable to that of microadenoma for larger adenomas with suprasellar extension, surgical decompression before pregnancy is discussed if medical treatment is ineffective on the adenomatous volume, with discontinuation of dopaminergic agonists during pregnancy and monthly clinical monitoring. In the absence of an intercurrent event, breastfeeding is most often allowed. In case of the appearance of a tumor syndrome (headache, visual disorders), a hypothalamic pituitary MRI is performed without gadolinium injection. If the adenoma is stable, there is no contraindication to breastfeeding, while if there is a significant increase in adenomatous volume, it is recommended to resume treatment with a dopaminergic agonist such as bromocriptine, and then breastfeeding is contraindicated. For some, the alternative is the continuation of medical treatment with dopamine agonists during pregnancy with possible discontinuation in late pregnancy to allow breastfeeding in the absence of a chiasmatic threat. In the case of our patient was a 7mm macroadenoma with compression of the optical pathways, which required the resumption of treatment (bromocriptine), dopaminergic agonist, with a contraindication to breastfeeding due to chiasmatic threat

2. Fetal risk associated with the treatment of prolactinoma

Pituitary surgery in the first trimester of pregnancy increases the risk of spontaneous miscarriage. For dopaminergic agonists, there are many published data for bromocriptine and less important for cabergoline, pergolide and quinagolide. The literature shows that there is no significant increase in fetal and neonatal complications in patients treated with bromocriptine and cabergoline. However, treatment with these dopaminergic agonists should be, if possible, stopped as soon as pregnancy is diagnosed. Faced with the appearance of a tumor syndrome, treatment with bromocriptine can be reintroduced during pregnancy and continued until delivery. Finally, in a patient wishing to become pregnant, treatment with pergolide and quinagolide should be replaced by bromocriptine (or possibly cabergoline) if tolerance permits because pharmacovigilance data show a significant teratogenic risk with these drugs. [5,6,7]

3. Impact of pregnancy on the natural history of prolactin adenomas

During pregnancy, there is a decrease in hyperprolactinemia in more than 50% of patients, especially when they have a macroadenoma, a reduction in the volume of adenoma in about 30% of cases, or even a cure in 10% of patients. This evolution could be related to the effect of es-

trogens that would lead to changes in the vascularization of the adenoma thus favoring a necrotic rearrangement, hemorrhages, or even apoplexy of the pituitary adenoma.

Childbirth

The choice of the mode of extraction and the choice of the optimal anesthesia technique for labor analgesia and anesthesia of cesarean delivery in patients with intracranial tumors is controversial. In healthy parturients, CSF pressure can increase significantly with painful uterine contractions [8]. In patients with an intracranial mass lesion, this situation could lead to an increased risk of engagement. The location and size of the tumor should be assessed in each patient so that an appropriate delivery plan can be developed with multidisciplinary input. [9] Epidural analgesia prevents the increase in ICP that may result from flare-ups during the second phase of labor [8]. Several published reports have described the successful use of epidural analgesia during labor in women with intracranial tumors [9,10]. However, in pregnant women with increased ICP, an involuntary dural puncture combined with an attempt to place an epidural catheter can lead to a fatal cerebral hernia. [11] As a result, many anesthesiologists prefer general anesthesia for cesarean delivery in patients with brain tumors [12], however, potential disadvantages of general anesthesia include: (1) loss of verbal and motor response that facilitates neurological assessment, (2) the risks of increased ICP with tracheal intubation and extubation.

The choice of anesthetic products for the induction of general anesthesia may consist of the administration of an induction dose of propofol or thiopental and a depolarizing or non-depolarizing neuromuscular blocking agent with rapid action. Some anesthesiologists avoid succinylcholine because it can cause a transient increase in ICP, but others consider this effect to be clinically insignificant. A combination of a volatile halogenated agent (sevoflurane or isoflurane), nitrous oxide, and an opioid is commonly used for the maintenance of anesthesia. To preserve cerebral and uteroplacental perfusion, hemodynamic stability should be maintained by appropriate fluid administration, avoiding aorto-cave compression, prophylactic or early use of vasopressor drugs, and intra-arterial blood pressure monitoring instituted prior to induction of anesthesia. Fluid management should involve the administration of isonatremic, isotonic, and glucose-free intravenous solutions to reduce the risk of cerebral edema and hyperglycemia. Mannitol administered to a pregnant woman accumulates slowly in the fetus, resulting in fetal hyperosmolality and subsequent physiological changes in reduced production of fetal pulmonary fluid, decreased fetal urine production, and increased fetal plasma sodium concentration; however, mannitol at doses of 0.25 to 0.5 mg/kg has been reported in individual cases and appears to be associated with favorable maternal and fetal outcomes. Furosemide is an alternative

diuretic that should also be administered with caution. [13] There may be some conflict between maternal and fetal interests in the patient with increased ICP. Moderate mechanical hyperventilation may be used to reduce the increase in PIC that occurs in non-pregnant patients with a brain tumor or brain injury. Minute ventilation increases during normal pregnancy, resulting in a maternal Paco₂ of 28 to 32 mmHg; Additional hyperventilation and hypocapnia may result in vasoconstriction of the uterine artery and a leftward shift in the maternal oxyhemoglobin dissociation curve. For pregnant women with an acute increase in PIC, Wang and Paech [13] suggested a target range of Paco₂ of 25 to 30 mmHg; however, there are currently insufficient data to support evidence-based recommendations specific to pregnant women. Management should be individualized according to the clinical context. When the decision is made to perform a caesarean section and brain tumor resection sequentially during the same anesthesia, hypertension should be avoided during induction and endotracheal intubation. Some authors used combinations of high-dose fentanyl or remifentanyl, labetalol, and propofol, or thiopental with succinylcholine. [13,14] Post-operatively, measures to minimize the risk of respiratory depression are indicated as hypoventilation can exacerbate ICP. In our context, upper extraction under general anesthesia was chosen as a route and technique of anesthesia following the results objectified by MRI tumor process with compression of the optics systems. The course of the operative act was without particularity. The surgical follow-up was favorable with regression of the tumor syndrome the patient was subsequently transferred to endocrinologic and neurosurgery service

Conclusion

The diagnosis of pregnancy in a patient with pituitary adenoma is a more or less rare possibility in clinical practice. Management involves the management of both the consequences of pregnancy on the natural history of pituitary adenoma and the risks to the mother and fetus. The choice of the method of extraction and the choice of the optimal anesthesia technique for labor analgesia and anesthesia of cesarean delivery inpatients is controversial.

Conflict of interest declaration: The authors declare that they have NO affiliations with or involvement in any organization or entity with any financial interest in the subject matter or materials discussed in the manuscript

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