When the improbable happens:a case of acromegaly diagnosed during pregnancy

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Introduction

❖ Pregnancy in a patient with acromegaly is uncommon, as the enlarging pituitary adenoma suppresses gonadotropin secretion rendering the patient amenorrheic and infertile. About 40% of women with pituitary adenomas also have hyperprolactinemia, which further decreases the likelihood of pregnancy. Due to its rarity, only limited data are available about pregnancy in acromegaly, although it appears that, after spontaneous or induced conception, pregnancy usually is uneventful and carries to term without complications to the newborn. We report a patient with acromegaly, first diagnosed in the 1st trimester of pregnancy. She needed no treatment except for the gestational diabetes. She delivered a full-term baby, by caesarean section.

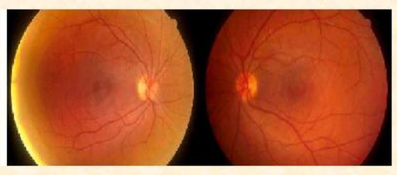
Clinical Presentation

❖ 32 years old woman

❖ Referred to our Endocrinology outpatient department in the 1st trimester of pregnancy with the diagnostic of **gestational diabetes (fasting glucose 98 mg/dL)**. Clinical examination revealed **acromegalic features**. Her blood pressure was normal.

❖ A few weeks before getting pregnant, because of a history of **headaches and amenorrhoea**, she underwent a brain *magnetic resonance imaging* (MRI) that showed a **pituitary macroadenoma**, with left cavernous sinus invasion but without compression of the optic chiasma. However, this result became available when she was already pregnant.

❖ She had no changes in visual acuity, visual fields or fundus (Fig. 1)



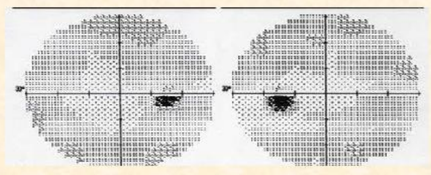


Fig. 1. Normal visual fields and ocular fundus

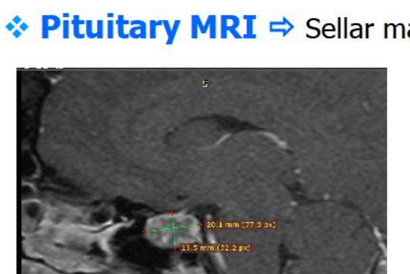
Laboratory and Imagiology (1)

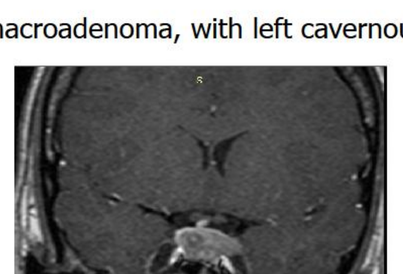
❖ **Laboratory tests on admission** revealed elevated growth hormone (GH) and insulin-like growth factor 1 (IGF-1). Prolactin was also mildly elevated.

Variable	Values	Reference Values
ENDOCRINOLOGY		
TSH (µg/mL)	0.74	0.55-4.78
FT_4 (ng/dL)	0.93	0.80-1.76
ACTH (pg/mL)	14.4	0-46.0
Cortisol (µg/dL)	10.9	4.3-23.0
Glucose (mg/dL)	**98**	**< 92**
HbA1c (%)	5.6	< 6
Prolactin (ng/mL)	**38**	**1.8-20.0**
GH (ng/mL)	**80**	**< 8.0**
IGF-1 (ng/mL)	**1443**	**101-267.0**

Laboratory and Imagiology (2)

❖ **Pituitary MRI** ⇨ Sellar macroadenoma, with left cavernous sinus invasion.





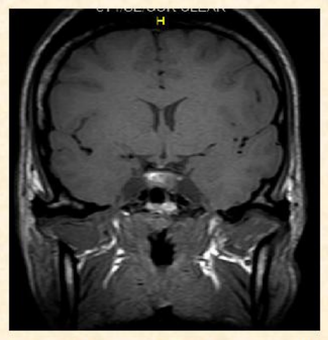
Treatment

❖ She was medicated only with insulin (detemir) for her diabetes, with excellent control. Serial visual field monitoring was performed, which remained normal, and signs and symptoms of acromegaly were stable, including the headaches.

Evolution

❖ All ultrasounds were normal and the patient delivered **a full-term** baby girl by caesarean section, **healthy and without any malformations**.

❖ 3 months later, **octreotide 20 mg** once a month was started, with progressive decrease in GH and IGF-1. After 8 months of treatment, a new MRI was performed showing a **significant reduction of the tumor** (Fig. 2). She is now under **octreotide 30 mg** once a month and 15 months after the beginning of octreotide the **IGF-1 level is 578 ng/mL**, GH 3 ng/mL, prolactin 19.7 ng/mL. Her glucose metabolism **is normal** and her acromegalic features **had regressed**. She remains amenorrheic but she is under oral contraception.



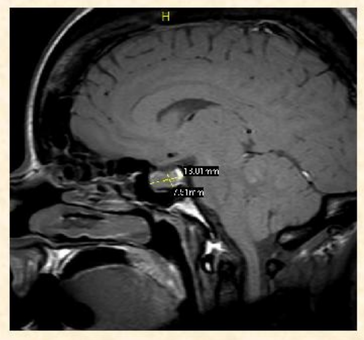


Fig. 2. Pituitary MRI after 8 months of treatment

Discussion

❖ Pregnancy by itself causes physiological enlargement of the normal pituitary gland. This effect is more marked in a patient with a pituitary macroadenoma and this leads to headache, visual symptoms, and field defects. In normal women, during the 1st trimester, pituitary growth hormone is the only measurable GH in maternal serum. After that, placental growth hormone contributes to the major portion of circulating GH. Placental GH is biologically active, stimulates the production of IGF-1, and may raise IGF-1 levels above the age-adjusted normal ranges. This raise will inhibit maternal GH production. In pregnant acromegalic patients, pituitary GH secretion is autonomous and not diminished, and IGF-1 increases in the second trimester as in normal pregnancy. Because of this, IGF-1 levels are less useful in diagnosis and the follow-up of acromegaly during pregnancy. To diagnose acromegaly in pregnancy, specific RIAs for placental GH are required to differentiate pituitary and placental secretion of GH, which are not available in most laboratories. If acromegaly is suspected during pregnancy, definitive diagnosis is difficult, and treatment may be postponed to the postpartum period. The utility of an oral glucose tolerance test for suppression of GH during pregnancy is not well established, but a TRH stimulation test or the pulsatile nature of GH secretion might be useful.

❖ Surprisingly, pregnancy may lead to improvement of acromegaly, probably due to the blocking effects of estrogen on IGF-1 production in the liver.

❖ It is mandatory to perform serial visual field testing, specially in patients with macroadenomas. Monitoring GH and/or IGF-1 levels during pregnancy is not recommended.

❖ Medical therapy should be considered in the setting of worsening headaches and/or evidence of tumor growth. Octreotide has been used successfully in acromegalic pregnant patients, without any deleterious effect on the fetus . Bromocriptine has also been used in acromegalic patients during pregnancy. Some reports describe patients who underwent to transnasal transsphenoidal resection of pituitary adenoma, during the 2nd trimester of pregnancy, with no danger to the fetus or the mother. Pegvisomant, a GH receptor antagonist, has been given to 2 patients with acromegaly during pregnancy without harm.

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