Pregnancy in women after successful acromegaly treatment, including surgical removal of pituitary adenoma and postoperative therapy using lanreotide acetate

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**ABSTRACT**

Acromegaly is one of the most common syndromes in pituitary adenomas. Naturally, women with this condition have trouble with their reproductive function. The difficulty in diagnosing acromegaly progression in pregnancy is that there is also production of placental growth hormone observed, making it impossible to differentiate from neoplastic growth hormone production using conventional methods of investigation. This article is about a clinical case of acromegaly in a 22 years old woman who was operated on using transnasal transsphenoidal approach and received postoperative treatment with somatostatin analog – lanreotide acetate autogel – for six months. The woman became pregnant in the course of the treatment. During pregnancy, the GH and IGF-I levels in serum remained within normal limits. Lanreotide acetate therapy was discontinued. The woman successfully gave birth to a healthy baby. There was a remission of the disease after pregnancy.

**Introduction**

Somatotropinoma is one of the most common types of pituitary adenomas, found in 15% of cases \cite{1,2}. Somatotropinoma synthesizes an excess amount of growth hormone, resulting in the development of acromegaly. Growth hormone operates through an insulin-like growth factor-1 (IGF-I), synthesized in the liver.

In somatotropinoma-induced acromegaly, infertility is rather common. It is believed to be caused by two factors. In some cases, it is tumor-associated hyperprolactinemia and tumor putting pressure on gonadotrophic cells, which causes amenorrhea \cite{3}.

Recently, as a result of the successful development of acromegaly treatment, namely using endoscopic transsphenoidal surgery and somatostatin analogs, more and more women have successfully become pregnant \cite{4}.

**Research Objective:** In this article, we want to demonstrate a case of successful pregnancy in a woman with acromegaly.

**Materials and methods of research**

In 2011, a 22-year-old woman had amenorrhea and medical examination by endocrinologist revealed enlargement of her hands and feet and coarsening of facial features. The patient was examined, which examination detected an increase in basal GH secretion to 6.57 ng/ml (with normal range of 0.06–5.0), which did not decrease during oral glucose test (OGTT). IGF-I study was not conducted, since at the time there was no such type of research in the Republic of Kazakhstan. Also, the study had revealed normal prolactin (PRL) level under normal conditions and equal to 11.84 ng/ml (normal range 8.9–23.3).

The patient underwent magnetic resonance imaging (MRI), which revealed a 20×15×18 mm endocellular growth pituitary macroadenoma.

The patient had a selective endoscopic endonasal transsphenoidal prostatectomy conducted in December 2011.

Postoperative supervision revealed that acromegaly and amenorrhea symptoms remained. In laboratory studies, an increased GH level to 6.09 ng/ml was found with OGTT, PRL level was also normal, while IGF-I level was not studied. An MRI was performed, revealing no signs of tumor recurrence. It was decided to begin lanreotide acetate treatment with 60 mg subcutaneously, once in 28 days, while monitoring GH and IGF-I levels. Lanreotide acetate therapy was started in April 2012.

In October 2013, the patient was diagnosed with 6 weeks pregnancy. It was decided to discontinue lanreotide acetate therapy and the patient was followed up by gynecologist, endocrinologist and ophthalmologist. One time in 2 months her visual fields, ophthalmic fundus and visual acuity were examined. No abnormalities were detected during checkups. Also, GH and IGF-I concentrations were studied once a month, which also remained within normal range during the entire period of pregnancy.

In May 2014, the patient safely delivered a healthy baby. Delivery was without complications.

After childbirth IGF-I, GH and PRL levels were studied. IGF-I = 301 ng/ml (normal range 117–329), GH during OGTT = 1.23 ng/ml and PRL = 19 ng/ml. After 2 months post-partum, an MRI was conducted, which revealed no recurrence of the tumor. The patient is followed up by endocrinologist and ophthalmologist. No evidence of disease recurrence observed.

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**Research findings**

Currently, acromegaly with pituitary adenoma is usually treated using endoscopic endonasal transsphenoidal surgery for treating pituitary adenoma via a subseptum mucosa approach and, subject to the symptoms of the disease after surgery, somatostatin analogs therapy.

Numerous studies have been devoted to pregnancy in acromegaly [5,6]. The analysis of these studies has shown that during pregnancy women with active acromegaly are under an increased risk of developing gestational diabetes and pregnancy-induced hypertension.

Changes in GH and IGF-I serum concentrations are variable during pregnancy, indicating that the monitoring procedure is not mandatory, where there are no complications in pregnancy. Treatment focused on GH reduction can be safely discontinued after conception in the majority of pregnant women with acromegaly [5,6]. Moreover, there is no evidence of the presence or absence of teratogenic effect from somatostatin analogs administration in pregnancy.

In our case, we have also decided that lanreotide acetate therapy can be discontinued and the clinical course of the disease and the dynamics of laboratory parameters (GH and IGF-I, PRL) can be closely monitored during pregnancy.

In detecting augmentation of clinical symptoms of acromegaly, visual impairment development or GH and IGF-I increase in serum, control MRI would have been conducted and, in the event of detection of tumor recurrence and its progressive growth, the plan was to begin treatment with dopamine agonists, as recommended by a number of researchers [7,8].

**Disclosure statement**

No potential conflict of interest was reported by the authors.

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