Diabetes insipidus and two consecutive pregnancies: a case report and review of the literature

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Summary

We report a case of a woman with a preexisting diabetes insipidus (DI), who had two consecutive uncomplicated pregnancies. Both pregnancies resulted after spontaneous conception and had a similar uneventful course. At the time of conception the patient was receiving 1-desamino-8D-arginine-vasopressin (DDAVP) 30 μg/d which maintained a urinary volume of 2-3 l/day. Pre-existing DI can be handled carefully and result in an uncomplicated pregnancy. In such cases careful monitoring of the patient's fluid balance and liver enzymes, as well as monitoring for pre-eclampsia and oligohydramnios during pregnancy are essential.

Key words: Diabetes insipidus; DDAVP; Pregnancy.

Introduction

Diabetes insipidus (DI) is a disorder in which the abnormal secretion, degradation, or activity of vasopressin causes hypotonic polyuria, polydipsia and dehydration [1]. DI is a relatively rare complication of pregnancy with an incidence of about one case per 300,000 gestations [1]. There are three different types of DI: central, nephrogenic, and transient.

With preexisting central DI, pregnancy usually aggravates the disorder, and the requirements for antidiuretic hormone (ADH) might increase. More often DI is first diagnosed during pregnancy. Changes in osmoregulatory mechanisms during pregnancy unmask a subclinical DI. Such effects are less likely to be noted in ADH-independent nephrogenic forms of DI.

The prior existence of DI in a woman did not appear to alter her fertility, the course of pregnancy, the effectiveness of labor, or lactation [2].

Case Report

We report a case of a Caucasian woman with a preexisting DI, who had two consecutive uncomplicated pregnancies, the first pregnancy in the 35th year of age and the second one in the 37th year of age. She had no history of psychiatric problems, cranio-encephalic trauma, headaches, visual disturbances or allergies. Her family history was unremarkable.

Both pregnancies resulted after spontaneous conception and had a similar uneventful course. At the time of conception the patient was receiving 1-desamino-8D-arginine-vasopressin (DDAVP) 30 μg/d which maintained a urinary volume of 2-3 l/day. The dose was not changed during pregnancy, nor during delivery.

In both pregnancies the initial serological examinations including liver enzymes were normal, and hematocrit count was 36%. Iron (200 mg/d), folic acid (10 mg/d) and calcium (1g/d) supplements were given throughout pregnancy, from 12 weeks onwards until term. First trimester ultrasonographic examinations performed at 11 + 3 and 12 weeks, respectively, were normal. Fetal biometry as well as the nuchal translucency measurement was within the normal range. The anomaly (second trimester) scan did not reveal any structural anomalies.

During the third trimester the pregnancies were followed up closely. Attention concerning maternal and fetal well-being was focused on avoiding possible deterioration of maternal endocrine status and detecting the development of fetal intrauterine growth retardation or distress. In specific, we performed sequential scans every two to three weeks to monitor fetal growth and amniotic fluid volume; Doppler measurements of uterine arteries, umbilical artery and fetal middle cerebral artery (MCA) were carried out as well. Fetal well being was estimated with a biophysical profile. Medication remained unchanged, while serological tests, including liver enzymes, remained within normal values.

Both labors began spontaneously. At admission all laboratory tests were normal, including electrolyte values, urine volume and specific gravity. Blood pressure was as well normal and presentation was cephalic in both labors. Oxytocin was not administered. The patient desired no epidural or combined anesthesia.

The first and second stages of labor progressed relatively rapidly in both labors, and soon she gave birth to a healthy female neonate weighing 3,625 g with an Apgar score at 1 and 5 min of 9 and 10, respectively (1st labor), and a male neonate weighing 3,200 g with an Apgar score at 1 and 5 min of 8 and 9, respectively (2nd labor). On physical examination the newborns were completely normal, with normal length and weight and normal genitalia.

The patient was discharged three days after the deliveries with normal urine-concentrating ability and serum sodium concentration. On reexamination by her obstetrician 40 days later, no medical complications were noted. She resumed her menstrual periods in the 7th week postpartum, in both cases.

Revised manuscript accepted for publication October 26, 2010

Discussion

There are three different types of DI: central, nephrogenic, and transient. Preexistent central DI is rarer than DI occurring during pregnancy for the first time. With preexistent central DI, pregnancy usually aggravates the disorder, and the requirements for antidiuretic hormone (ADH) usually increase. On the contrary, DI occurring during pregnancy is generally transient and usually resolved in the postpartum period [3-5].

The term "transient vasopressin–resistant DI of pregnancy" first used in 1984, to characterize three women with vasopressin–resistance DI that developed in late gestation and remitted postpartum [6]. Known physiological changes associated with pregnancy, such as decreased thirst threshold [7], enhanced vasopressinase secretion with reduced vasopressin secretory capacity [8], increased degradation of vasopressin by placenta-derived vasopressinase [9-11] and a substantial increase in the placental clearance of vasopressin [12], may be theoretical predisposing factors for pregnancy transient DI.

The prior existence of DI in a woman did not appear to alter her fertility, the course of pregnancy, the effectiveness of labor, or lactation [2]. During pregnancy 60% of the DI cases worsen, 25% improve, and 15% remain unchanged [1]. In our case both pregnancies and deliveries developed without any complications. Pregnancies in which DI is diagnosed for the first time are often complicated with preeclampsia, while in pregnancies with preexisting DI, preeclampsia is uncommon [13, 14]. Severe oligohydramnios was also reported in a case of transient DI that resolved after treatment of diabetes insipidus [15], thus DI should be considered in the differential diagnosis of oligohydramnios.

Most women with DI need a larger dosage of vasopressin during pregnancy, which is possibly due to an increase in the speed with which it is metabolized [11]. In our case, no adjustment in the dose of vasopressin was needed.

Infants born after a pregnancy complicated with DI usually present normal birth weight and gestational length and no congenital malformations [16]. Maternal diabetes insipidus and treatment with desmopressin during the whole pregnancy does not constitute a major risk for the infant.

Conclusion

Pre-existing DI can be handled carefully and result in an uncomplicated pregnancy. In such cases careful monitoring of the patient's fluid balance and liver enzymes, as well as monitoring for preeclampsia and oligohydramnios during pregnancy are essential.

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