Bratisl Lek Listy 2011; 112 (11)
651 – 652

CASE REPORT

Classic congenital adrenal hyperplasia with virilisation and salt-wasting: from birth to the adult life

Iavazzo C, Myriokefalitaki E, Ntziora F, Bozemberg T, Baskozos I, Papargyriou T, Paschalinopoulos D

General Clinic of West Attica – Vougiouklakeion Hospital, Athens, Greece. **christosiavazzo@hotmail.com**

Abstract: *Aim:* Our objective was to show the way the classic CAH presents after birth as a severe condition and develops to the adult life, effecting growth, height and weight, appearance, fertility, relationships and quality of life.
Case: We report the case of a 23-years-old female with the classic Congenital Adrenal Hyperplasia (CAH) from birth, diagnosed due to genital pigmentation, clitoromegaly and salt-wasting crisis, treated with glucocorticoid replacement (hydrocortisone, fludrocortisone and NaCl), followed by genital surgery, until the adult life when she continues treatment with fludrocortisone and prednisolone.
Conclusion: A treatment challenge is to effectively control the excess androgen symptoms by using the lowest possible glucocorticoid dose. Patients well-being can be accomplished by team work, adapted therapy, continues follow-up and patient's compliance *(Ref. 15)*. Full Text in free PDF *www.bmj.sk.*
Key words: congenital adrenal hyperplasia, virilisation, salt-wasting, birth, adult life.

Congenital adrenal hyperplasia (CAH) is a genetic, endocrinologic disorder. The severe classic form occurs in one in 15,000 births worldwide. Twenty-one-hydroxylase deficiency (21OHD) is the most common cause of this autosomal recessive disease. It can cause virilization, ambiguous genitalia at birth and severe conditions due to salt-wasting (1, 2).

We report the case of a 23-years-old female with the classic Congenital Adrenal Hyperplasia (CAH). Our objective was to show the way the classic CAH presents after birth and develops to the adult life, effecting growth, height and weight, appearance, fertility, relationships, and quality of life. Patients well-being can be accomplished by team work, adapted therapy, continues follow-up and patient's compliance. Treatment is based on glucocorticoid replacement through the lifetime long term, and should be focused on optimizing fertility, quality of life and minimizing glucocorticoid side effects.

Case report

The patient was born of a healthy couple and her mother had not been treated with any drug during pregnancy. On clinical examination, after birth, external genital pigmentation and clitoromegaly was observed. At the age of 7 days, she developed condition such as vomiting, impaired consciousness and severe dehydratation. Laboratory tests revealed hyponatremia, hyperkalemia, hypochloremia and metabolic acidosis. The classic Congenital Adrenal Deficiency due to 21-OH-deficiency was strongly suspected because of her clinical examination and symptoms. Serum hormones tests and genetic analysis, later on, confirmed the diagnosis. Her karyotype was normal, female of 46, XX. She was treated with hydrocortisone, fludrocortisone and NaCl. Under a continuous treatment, her state improved.

Since then, she followed periodically a control of serum testosterone, Δ4-androstendione, 17-OH-progesterone, ACTH, renin, and K, Na and Cl in order to adjust the medication dosage. Height and weight have been systematically reviewed throughout her growth. At 2 years, she was taken off the salt supplementation. At the age of 8, she underwent a genital surgery due to recurrent urinary infections. The renal ultrasound and scintigraphy was normal. A reduction of clitoris hypertrophy and vaginal reconstruction was performed. She had menarche at 13 years.

In the adult life, she continues the therapy with fludrocortisone and prednisolone, replacing hydrocortisone. Today, she is 23-years-old, with normal sex life, but suffers hirsutism, acne and oligomenorrhea. Her pelvic ultrasound is normal. Her height is 145 cm, weight is 69.5 kg, with the body mass index (BMI) of 33 kg/m^2.

Discussion

Congenital adrenal hyperplasia (CAH) refers to any of several autosomal recessive diseases resulting from mutations of genes for enzymes mediating the biochemical steps of steroido-

General Clinic of West Attica – Vougiouklakeion Hospital, Athens, Greece

Address for correspondence: C. Iavazzo, MD, General Clinic of West Attica – Vougiouklakeion Hospital, 38, Seizani Str., Nea Ionia, Athens, Greece.
Phone: +306948054119

genesis and production of cortisol from cholesterol by the adrenal glands. The severe classic form occurs in one in 15,000 births worldwide (1, 2). Twenty-one-Hydroxylase Deficiency (21OHD) is the most common cause of this endocrinologic abnormality. It can cause virilization, ambiguous genitalia at birth and severe conditions due to salt-wasting (1, 2). An immediate diagnosis and treatment is needed. Therapy is based on glucocorticoid (hydrocortisone and fludrocortisone) and salt replacement according to daily needs. Dosage is individualized, based on serum hormones values and electrolytes' range (3, 4). Fludrocortisone is given to maintain normal electrolyte and plasma renin activity.

At first years of life, genital reconstructive surgery is usually performed to correct problems produced by abnormal genital structure. In our patient, recurrent urinary infections drove to vaginal reconstruction and clitoris reduction with a very good result, at the age of 8. The success of surgical treatment and following hormonal therapy can affect the psychological health and afterwards the sexual life (5). Growing up, height and weight are to be under systematic control in order to achieve a maximum final adult height and a normal BMI (6). Women with CAH tend to be shorter than expected, because of early bone maturation (7). Also, they are at a higher risk to develop obesity due to altered leptin axis (8). They can have virilising voice (9) and skin problems as hirsutism, acne caused by the androgen excess. In adolescent, hydrocortisone is being replaced by dexamethasone or prednisolone and controlled therapy can reverse hyperandrogenic signs (10) and could negatively affect bone mineral density (11). In adults, hydrocortisone, prednisone, prednisolone, dexamethasone, or a combination of treatments may be used. Females with CAH could suffer from hypertension and osteoporosis due to glucocorticoid effect. In the classic CAH, fludrocortisone is recommended and allows the management with lower doses of glucocorticoid (12).

In our case, the final height achieved is 92 % of mid-parental height and overweight is a problem. Fludrocortisone continued, in order to control the androgen excess and glucocorticoid therapy side effects, in minimum doses of prednisolone, because our patient suffers hirsutism, acne and oligomenorrhea. Due to anovulation and menstrual irregularity, these women's fertility rate is lower than of general population, but pregnancies can be carried out normally, under the treatment adjustment (13, 14). In our patient, this issue yet has not been raised.

Conclusion

CAH is a genetic, endocrinologic disorder that demands the diagnosis and treatment right from the birth. Various specialties such as neonatologist, pediatrician, endocrinologist, urologist, psychologist and genetist should work together in order to achieve the best results (15). Treatment challenge is to individualize therapy and effectively control the excess androgen symptoms by using the lowest possible therapeutic dose, in order to avoid glucocorticoid side effects and optimize the reproductive, sexual, and bone health.

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Received August 12, 2009.
Accepted June 26, 2011.