International Journal of Clinical Case Reports 2013, Vol.3, No.5, 29−30
http://ijccr.sophiapublisher.com

Research Report Open Access

A Rare Cause of Primary Amenorrhea and Hypokalemia; 17-A-Hydroxylase Deficiency (17OHD)

Mustafa Demirpence, Devrim Dolek, Fusun Salgur, Ahmet Gorgel, Ece Harman, Mithat Bahceci
Department of Endocrinology and Metabolism, Ataturk Training and Research Hospital, Izmir, Turkey
Corresponding author email: demirpencemustafa@gmail.com
International Journal of Clinical Case Reports 2013, Vol.3, No.5 doi: 10.5376/ijccr.2013.03.0005
Received: 24 Apr., 2013
Accepted: 10 May, 2013
Published: 12 May, 2013

Preferred citation for this article as:
Demirpence et al., 2013, A Rare Cause of Primary Amenorrhea and Hypokalemia; 17-A-Hydroxylase Deficiency (17OHD), International Journal of Clinical Case Reports, Vol.3, No.5 29-30 (doi: 10.5376/ijccr.2013.03.0005)

Abstract A 22−year-old female patient was admitted due to primary amenorrhea and chronic weakness. Parental consanguinity, delayed puberty with normal stature form the additional information. Hypokalemia with metabolic alkalosis, low cortisol, high ACTH, LH and FSH pointed to the possibility of congenital adrenal hyperplasia (CAH) with 17α hydroxylase deficiency (17 OHD). 46XX karyotype and high progesterone supported this. In summary, the possibility of 17 OHD should be suspected in patients with hypokalemic normal blood pressure or hypertension and hypergonadortropic hypogonadism. Our patient all clinical and laboratory findings we diagnosed a 17−alpha−hydroxylase deficiency in this patient and hydrocortisone (10 mg/day) and ethinyl estradiol 0.03 mg/day was started.

Keywords 17−α−hydroxylase deficiency, Hypokalemia and primary amenorrhea

Introduction

17−hydroxylase (17−OH) deficiency is a rare form of congenital adrenal hyperplasia resulting from mutation in *CYP17* gene (Chung et al., 1987). It is an a autosomal recessive defect and estimated incidence is approximately 1 in 50.000 individuals (Grumbach et al., 2003). This enzyme is necessary to convert pregnenolone to 17−hydroxypregnenolone and progesterone to 17−hydroxyprogesterone. Absence of this enzyme impairs all sex steroid and cortisol production. It cause to reduced or absent levels of both gonadal and adrenal sex hormones result in sexual infantilism. Patients are usually diagnosed during an evaluation of delayed puberty. We reported a female patient with typical of 17OHD.

Case

A 22−year-old female patient was admitted due to primary amenorrhea and chronic weakness. She had 3 normal siblings and parents of patients were consanguinious. Physical examination revealed sexual infantilism (Figure 1). Persistant hypokalemia (3.1 meq/L) and metabolic alkalosis were determined (pH: 7.6). Karyotype of the patient was 46XX. Serum cortisol (0.8 mcg/dL), aldosterone (40 pg/mL), DHEAS (14,8 µg/dL), estradiol (<11,8 pg/dL), total testesteron (<10 ng/dL) and 17−OH progesterone (0,46 ng/mL)

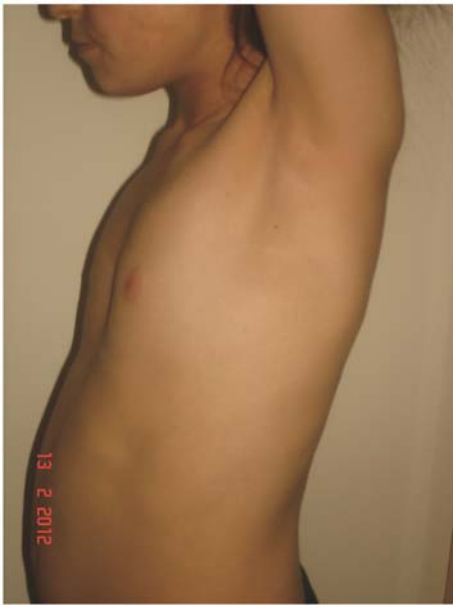

Figure 1 Apperance of the patient with sexual infantilism

levels were low, whereas ACTH (119 pg/mL), FSH (86 mIU/L) and progesterone levels were high (11 ng/mL, normal range <1.5 ng/mL). With these findings we suspected from congenital adrenal hyperplasia and an ACTH stimulation test with 1 mg tetracosactrin was performed. Results pointed out an 17−alpha hydroxylase deficiency (17−OH progesterone levels were low (baseline: 0,46 ng/mL, 30th min:

0.52 ng/mL, 60th, min: 0.53 ng/mL, 90th min: 0.55 ng/mL) and hydrocortisone (10 mg/day) and ethinyl estradiol 0,03 mg/day was started.

Discussion

17OHD is a very rare syndrome and there was only 1 case reported in Turkey (Kandemir and Yordam, 1997). Prevalence may be more common in Brazil (Belgini et al., 2010). The classical presentation of 17OHD is hypokalemia and delayed puberty (Biglieri et al., 1996). Approximately 90% patients are hypertensive or hypokalemic at presentation. Our patient had all the classical features of this syndrome apart from hypertension. Adrenal insufficiency does not reflect classical fetaures of Addison's disease because of increased production of corticosterone. Our patient had normal female phenotype, primary amenorrhea with sexual infantilism (absence of breast development and axillary and pubic hair). Deficient estrogen production explains hypergonadotropic hypogonadism. Estrogen therapy is given for induction of puberty and could be required with progesterone in later life to prevent osteoporosis. Parents of our patient were consanguineous and there was no any similar patient of family history of the patient, therefore, consanguineous marriage may be responsible for emerging of this patient.

As a conclusion, although 17OHD is a rare cause of CAH and primary amenorrhea; it should be consid ered when delayed puberty occurs in patients with hypo-kalemia and hypergonadortropic hypogonadism.

References

Chung B.C., Picado-Leonard J., Haniu M., Hall P.F., Shively J.E., Miller W.L., 1987, Cytochrome P457c17 cloning of human adrenal and testis cDNAs indicates the same gene is expressed in both tissues, Proc. Natl. Acad. Sci. U S A., 84: 407-411
http://dx.doi.org/10.1073/pnas.84.2.407
PMid: 3025870 PMCid: 304216

Grumbach M.M., Hughes I.A., and Conte F.A., 2003, Disorder of sex differentiation, In: Larsen P.R., Kronenberg H.M., Melmed S., eds., Williams textbook of endocrinology, 10th edtion, Philadelphia: Saunders, pp.842-1002

Kandemir N., and Yordam N., 1997, Congenital adrenal hyperplasia in Turkey: A review of 273 patients, Acta Paediatr, 86(1): 22-25
http://dx.doi.org/10.1111/j.1651-2227.1997.tb08824.x
PMid: 9116420

Belgini D.R., Mello M.P., Baptista M.T., Oliveira D.M., Denardi F.C., Garmes H.M., Grassiotto Oda R., Benetti Pinto C.L., Marques-de-Faria A.P., Maciel-Guerra A.T., and Guerra-Júnior G., 2010, Six new cases confirm the clinical molecular profile of complete combined 17a-hydroxylase/17,20-lyase deficiency in Brazil, Arq. Bras. Endocrinol. Metabol., 54(8): 711-716
http://dx.doi.org/10.1590/S0004-27302010000800008
PMid: 21340157

Biglieri E.G., Herron M.A., and Brust N., 1996, 17-α-Hydroxylase deficiency in man, J. Clin. Invest., 45: 1946-195
http://dx.doi.org/10.1172/JCI105499
PMid: 4288776 PMCid: 292880