A rare cause of primer adrenal insufficiency: Mutation in *NROB1 (DAX1)*

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Introduction: Congenital adrenal hypoplasia, a rare cause of childhood primer adrenal insufficiency, is caused by defects in transcription factors involved in the development of adrenal gland. One of them is the *NROB1 (DAX1)* gene, localized in Xp21.2. *DAX1* mutations have been identified that cause X-linked adrenal hypoplasia congenita. Infants affected with X-linked adrenal hypoplasia congenita may present with salt-wasting, micropenis or cryptorchidism. Moreover, delayed puberty and infertility due to hypogonadotropic hypogonadism caused by *NROB1 (DAX)* mutations have also been reported.

2/12 year male infant

Abnormal eye movements and suspicious of seizure

Birth weight : 3400 gr
Delivery at term

Nonconsanguineous parents
Five brother of the mother had died during neonatal period due to unidentified etiology

Weight :4000 gr (3-10th centile), Height : 58 cm (50-75th centile)
Blood pressure : 85/60 mmHg
Genital examination revealed normal male external genitalia

•Laboratory examination revealed hyponatremia (115 mmol/L), hyperkalemia (7.5 mmol/L), hyperreninemia, high ACTH (1094 pg/mL) and relatively low cortisol (8.1 µg/dl) levels.

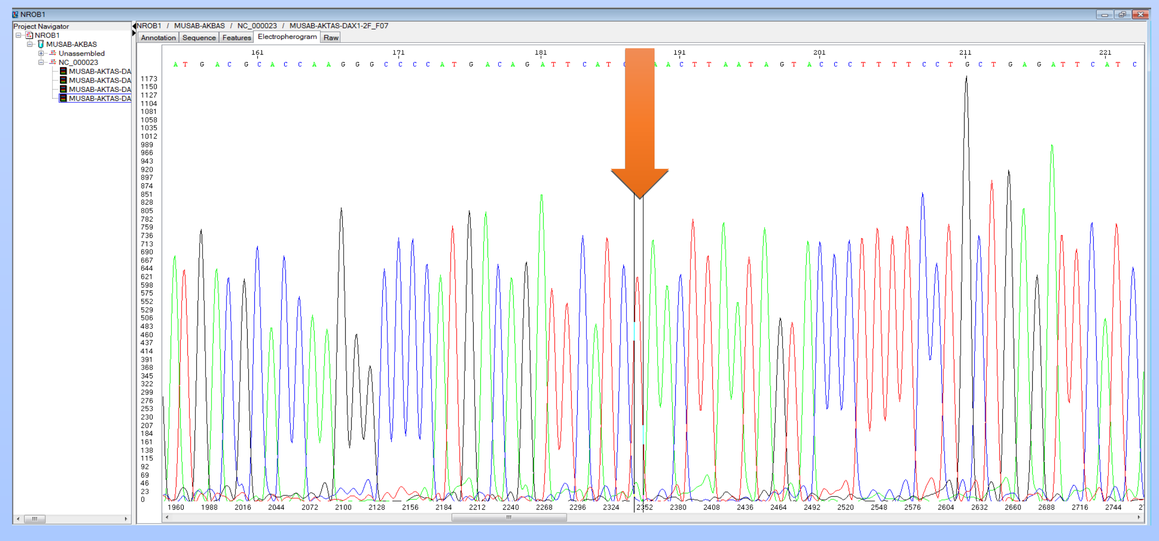
•The diagnosis of primer adrenal insufficiency was established and hydrocortisone and fludrocortisone were started.

2 months male infant

- **Adrenal insufficiency**
- **Androgens (-)**
- **Male infant deaths in family**

Table 1: the Laboratory of the case

Parameters	Result	Normal values
Glucose	90	60-100 mg/dl
Na	115	139-146 mmol/L
K	7,9	4,1-5,3 mmol/L
Urine Na	31	41-115 mmol/L
LH	3,3	0,02-7 mIU/ml
FSH	1,89	0,2-4,1 mIU/ml
ACTH	1094	0-46 pg/ml
Cortisol	8,1	2,8-23 µg/dl
Total testosterone	241,4	75-400 ng/dl
DHEA-S	40,8	1-41 µg/dl
11-deoxycortisol	0,74	0,1-2 ng/ml
1,4-androstenedione	1,3	0,6-3,3 ng/ml
17-hydroxyprogesterone	0,33	<2,1 ng/ml
Renin	>500	pg/mL
Aldosterone	24,78	5-90 pg/ml



Hemizygos non-sense mutation
[c.1282G>T (p.Glu428Ter)] in *NROB1 (DAX1)*

RESULTS:

Genetic defects in *NROB1 (DAX1)* have been reported in two thirds of male cases with undiagnosed primary adrenal insufficiency. Therefore, all male patients with non-CAH primary adrenal insufficiency should be screened for *NROB1 (DAX1)* defect.