Vascular and cardiac function in young adults with classical congenital adrenal hyperplasia

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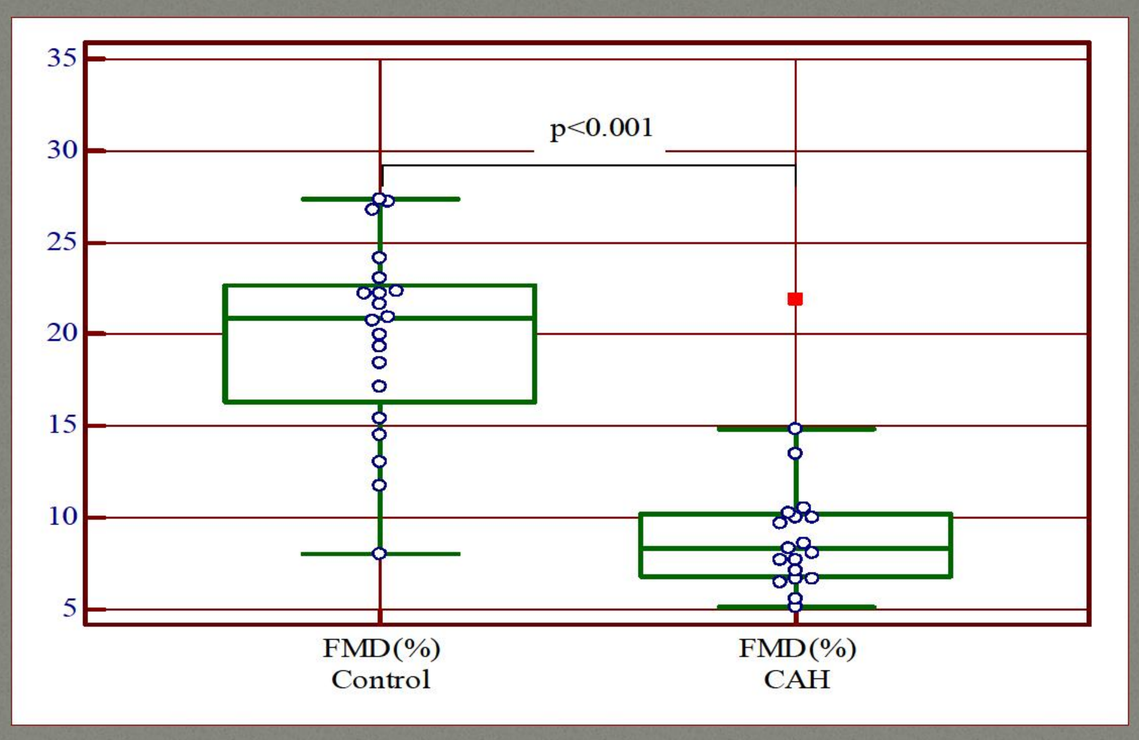
Background: The patients with classical congenital adrenal hyperplasia (CAH) have increased cardiovascular risk due to the lifelong corticosteroids therapy and the disease per se.

Objective: To evaluate vascular and cardiac function in adults with CAH during optimal glucocorticosteroid and fludrocortisone replacement therapy.

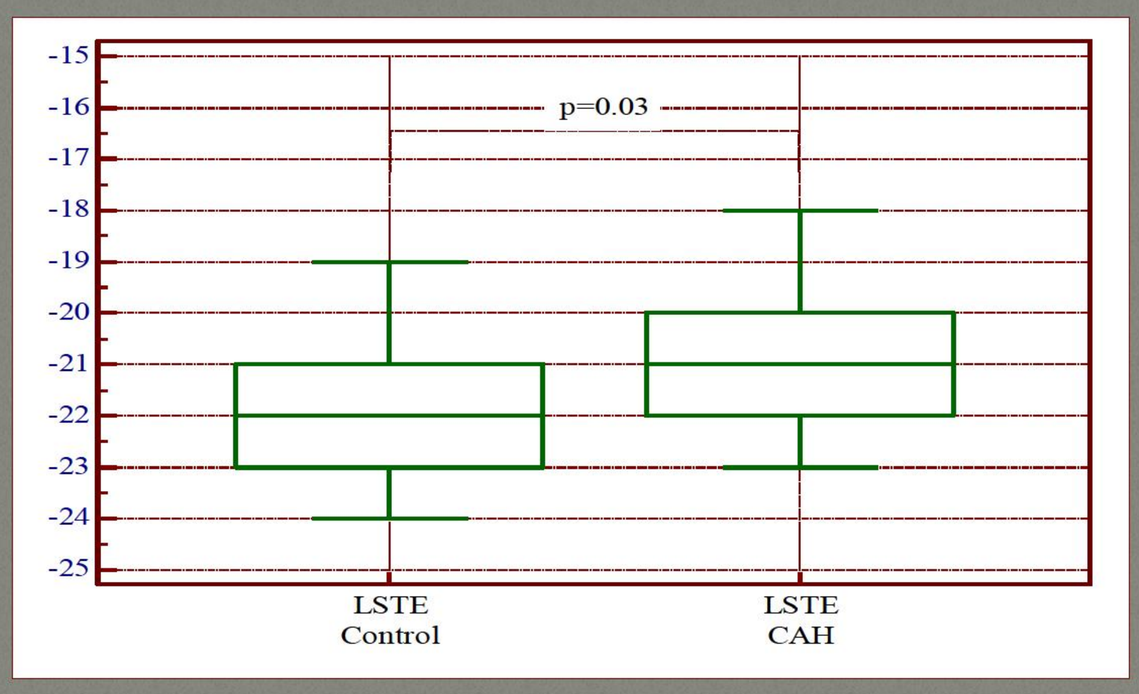
Patients and methods: Cross-sectional study of 19 adults with CAH (age 23.7 years 3.8; males 63%) compared to 21 healthy voluntaries (age 23.2 years 2.6; males 60%) matching to the age and body mass index. All of the participants had assessed the flow mediated dilatation of the brachial artery (FMD), the intima-media thickness of the common carotid artery (CIMT), the intima-media thickness of the common femoral artery (FIMT), the left ventricular ejection fraction (LVEF%), left ventricular mass index (LVMI) and longitudinal left ventricular function using two-dimensional speckle-tracking echocardiography (LSTE). Classical cardiovascular risk factors and hormones status were also measured.

Results: The patients with CAH compared with controls have decreased FMD (mean FMD% 9.4, 95%CI:7.2-11.6 vs mean 19.8, 95%CI: 17.7-21.9; p<0.01) and the difference was still significant after correction for potential confounders such as: brachial artery diameter, age, sex, the dose of glucocorticosteroid and fludrocortisone (mean FMD% after correction 9.2, 95%CI: 4.2-14.3 vs 20.0, 95%CI: 15.2-24.9; p=0.02). The CIMT and FIMT was higher in the CAH group baseline (for CIMT mean 0.47 mm, 95%CI: 0.46-0.49 vs mean 0.40 mm, 95%CI: 0.38-0.42; p<0,001, for FIMT mean 0.47 mm, 95%CI: 0.45-0.48 vs mean 0.41 mm 95%CI: 0.38-0.42; p<0.001) but not after correction for potential confounders such as: age, sex, the dose of glucocorticosteroid and fludrocortisone, total cholesterol level, smoking status (for CIMT and FIMT p=ns). g



Clinical characteristics CAH (N=19)	Mean SD Median (25Q-75Q)
Age (years)	24 4
BMI (kg/m²)	24.9 5.1
17 -OHP (ng/ml)	93.7 (1.3 - 400)
Testosterone (ng/ml)	3.35 2.9
Free testosterone (pg/ml)	16.9 14.8
DHEAS (µg/ml)	72.7 (5.6 - 171.5)
Androstendion (ng/ml)	2.82 (0.75 -13.9)
Hydrocortisone (mg/m² ·d)	15.2 4.8 (n=18)
Dexamethasone (µg/d)	281 146 (n=9)
Fludrocortisone (µg/d)	111.1 185 (n=14)

The CAH subjects compared with controls have normal and similar LVEF%, LVMI. The mean absolute value of LSTE differs in the CAH patients compared with controls (20.9%, 95%CI: 20.2-21.6 vs 21.9%, 95%CI: 21.2-22.5; p=0.03).



ECHO	Control (N=21)	CAH (N=19)	p
LV EF(%)	65 4	64 4	0.60
LVMI (g/m2)	87.4 12	90.4 15	0.50
Vp (cm/s)	85 13	77 27	0.33
e' (cm/s)	16.8 1.0	14.5 3.3	0.03
E/e'	4.9 0.95	5.9 1.6	0.06
LSTE (%)	-21.9 1.6	-20.8 1.4	0.03

Conclusions: Young adults with CAH have impaired endothelial function but the increased of IMT may be related to hormones supplementation. In addition patients with CAH have impaired left ventricular function in two-dimensional speckle-tracking echocardiography.

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