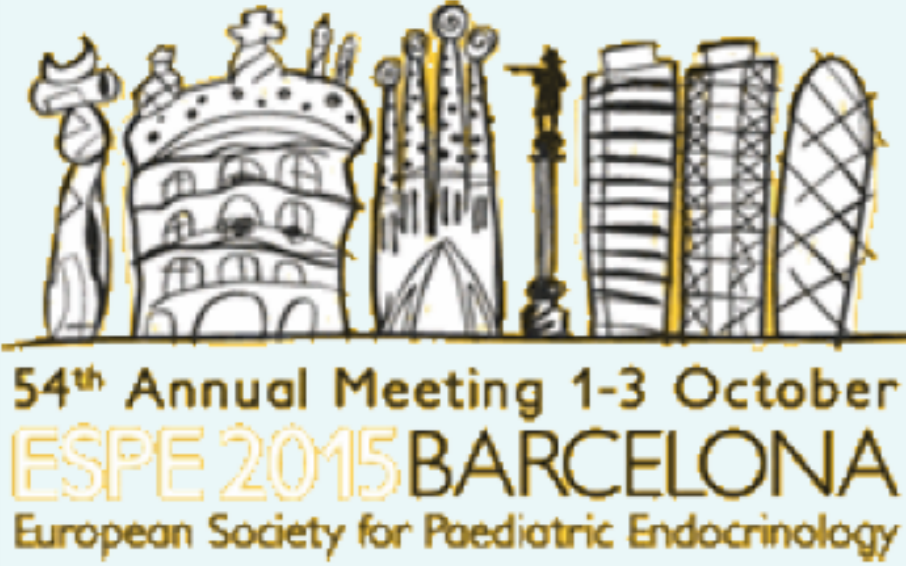


The impact of growth hormone (GH) therapy combined with estrogens on blood pressure (BP), cardiac left ventricular (LV) dimensions and lipid metabolism in pubertal girls with Turner's syndrome (TS).

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Objective

The risk of hypertension is estimated to occur in 7–17% of children and 24–40% of adults with TS . Furthermore, even girls with TS who are normotensive have been shown to have an abnormal circadian blood pressure rhythm, with loss of nocturnal reduction in blood pressure, increasing the risk of end-organ hypertensive damage. We performed this study to assess effects of GH treatment combined with estrogens for short stature on left ventricular dimensions, systemic BP and lipid metabolism in girls with TS without clinically relevant cardiac abnormalities.

Design and method:

Turner syndrome occurs in one out of every 2,500 to 3,000 live female births

20 girls with TS, not treated before, were treated with GH and estrogens during 2 years. Dose of GH – was 0,05 mg/kg/daily sc., estradiol gel was 100 mg/daily in transdermal application.

Anthropometry, systemic BP assessed every 3 months. Total cholesterol (TH), low density lipoproteins (LDL), high density lipoproteins (HDL),triglycerides (TG) levels were measured every 6 months , left ventricular systolic function (LVSF) was estimated by echocardiography every 12 months.

	Baseline	1 year	2 year	P (0-1)	P (0-2)
Age (year)	12,4 1,09	-	-	-	-
Height gain (sm)	-	6,67 2,05	16,18 2,98	-	-
Total cholesterol (mmol/l)	5,02 1,03	4,67 0,83	4,57 0,78	0,338	0,241
LDL (mmol/l)	3,21 0,88	2,75 0,71	2,57 0,78	0,276	0,117
HDL (mmol/l)	1,41 0,29	1,43 0,32	1,48 0,26	0,815	0,511
TG (mmol/l)	0,91 0,52	1,08 0,48	1,09 0,43	0,368	0,350
LVEF (%)	63,15 4,62	62,98 3,84	63,75 3,95	0,920	0,735
LVED (ml)	45,23 9,77	50,38 10,64	55,91 9,37	0,211	0,012
LVEC (ml)	16,77 4,64	18,69 4,57	20,27 4,20	0,2981	0,067
SVI	25,30 2,67	28,44 7,18	29,86 2,25	0,727	0,019

Results:

After 2 years of treatment SBP and DBP levels were not significantly different from baseline. The SD score of the diastolic BP showed a small decrease after 2 years of treatment. In the course of GH therapy the TH, TG, LDL and LDL levels were not changed related to baseline. At baseline the LV dimensions of all the girls were within normal range, and the mean SD scores were close to zero. During 2 years of GH-therapy LVED was significantly increased (p=0,012673), SVI was increased accordingly (p=0,019512). There were not significant changes in LVES and LVEF between baseline and 2-years timepoint.

Conclusion:

1. GH treatment does not result in LV hypertrophy or hypertension in girls with TS during 2-years therapy, despite the dramatic body height gain. But continued observation under long-term therapy is recommended.
2. GH-therapy combined with estrogens in girls with TS was not induced a change in lipids levels probably because of its levels were in normal ranges at baseline.