

Background

Gender differences in sex steroids and insulin-like growth factor-I (IGF-I) are well known from pubertal years into adulthood. Few studies report data from pre-school years.

Objective and hypotheses

To study gender specific changes in sex steroids and IGF-I at birth and at five years of age and correlate these with auxological measurements.

There are gender differences in IGF-I levels due to differences in sex steroids already at birth and during pre-school years.

Results

There was no statistical difference in gestational age median (range): boys 35.8 (33.0-36.9) weeks versus girls 35.6 (32.0-36.7) weeks, table 1.

At birth, IGF-I levels were significantly lower for boys; 38 (7-93) $\mu\text{g/L}$ than for girls 54 (8-96) $\mu\text{g/L}$, $P < 0.05$.

At five years of age, boys still had lower IGF-I levels; 89 (45-177) $\mu\text{g/L}$ versus 105 (45-221) $\mu\text{g/L}$ in girls, $P < 0.01$, figure 1.

At birth, testosterone levels were higher for boys 3.8 (1.7-8.8) nmol/L versus 3.0 (1.2-5.1) for girls, $P < 0.01$. Testosterone levels were significantly lower in boys at five years of age; 0.14 (< 0.03 -0.34) nmol/L versus 0.20 (< 0.03 -0.36) nmol/L in girls, $P < 0.05$, figure 2.

Estradiol levels did not differ between genders, neither at birth, nor at 5 years of age.

Table 1. Auxological data at birth.

	Boys (n=45)	Girls (n=35)	P value
Gestational age (weeks)	35.8 (33.0-36.9)	35.6 (32.0-36.7)	0.111
Birth weight (grams)	2495 (1345-3320)	2365 (945-3815)	0.216
Birth length (cms)	47 (39-51)	45 (33-51)	0.156
Head circumference (cms)	33.0 (28.5-35.0)	32.0 (25.8-35.0)	0.004
Age (years)	5.0 (4.9-5.2)	5.0 (4.9-5.1)	0.579
Weight (kgs)	18.9 (15.1-31.2)	18.5 (13.2-27.5)	0.250
Length (cms)	113.2 (102.7-124.6)	111.1 (101.5-120.3)	0.032
Head circumference (cms)	52.0 (49.4-55.2)	50.5 (47.4-53.8)	0.000

Data are expressed as median (range)
Comparison between groups were calculated with Mann-Whitney U test

Methods

Eighty prepubertal children (35 females and 45 males) born moderately preterm (gestational age 32+0 to 36+6 weeks) were examined with blood sampling and auxological measurements at birth and five years of age. Estradiol, testosterone, and IGF-I were measured with RIAs.

CONCLUSION

Gender differences in testosterone and IGF-I were found at birth and at five years of age. Boys had lower levels of IGF-I at both time points. However, there was a shift in gender differences concerning testosterone with higher levels at birth and lower levels at five years of age in boys. The higher testosterone levels seen in girls at five years of age may be due to a non-detected earlier adrenarche in girls.

Figure 1. IGF-1 at birth and at five years of age

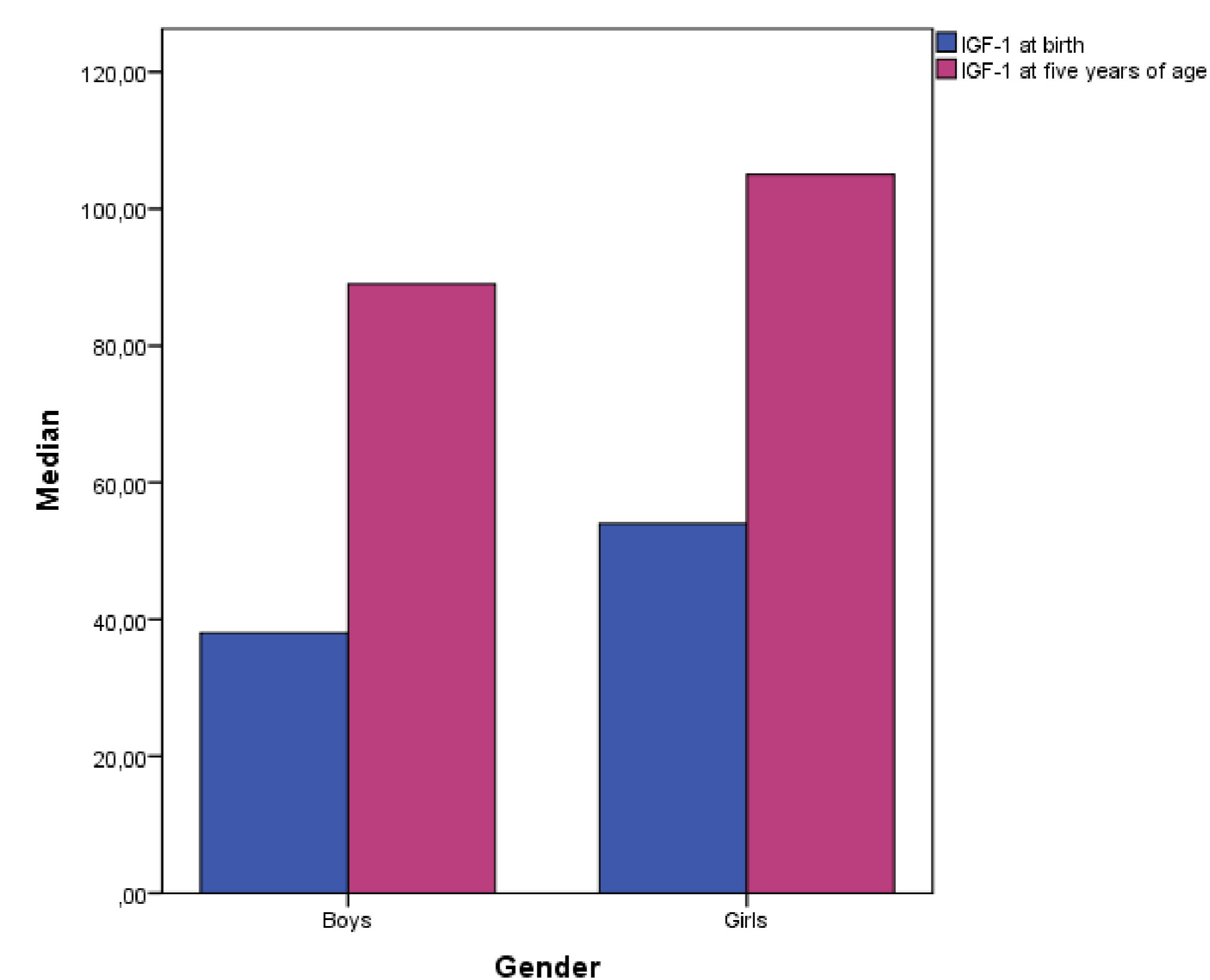


Figure 2. Testosterone at birth and at five years of age

