

Birth characteristics influence the male to female prevalence of idiopathic growth hormone deficiency

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Disclosures

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Background

- A greater number of male (M) vs female (F) patients are diagnosed with GH deficiency (GHD) (1).
- Vaginal delivery of breech presentation and perinatal anoxia are frequently associated to GH deficiency (2). Males have larger birth weight (BW), birth length (BL) and birth head circumference (HC), characteristics that could contribute to subtle cephalic-pelvic disproportion and mild head trauma possibly associated with idiopathic GHD (IGHD) and in multiple pituitary hormone deficiencies (MPHD).

Objective

To determine birth characteristics including mode of delivery and MRI abnormalities that could influence the male to female preponderance in IGHD and in MPHD.

Patients and Methods

The main inclusion criteria: patients who had data available on key parameters GHD + BW + mother's height + MRI

- Participants were patients with IGHD and MPHD registered in Pfizer International Growth Database (KIGS).
 - **Children with IGHD**, with a stimulated peak GH < 7 µg/L, N=14853, (M/F: N=10131/4722)
 - **Children with MPHD**, N=5218, (M/F: N=3451/1767)
- Wilcoxon rank sum test was used for univariate statistical comparisons.
- ANOVA was used for group comparisons. P value < 0.01 considered statistically significant.

Results

Table : Clinical and radiological characteristics of study population (mean values)

Group	Dimension	IGHD (GH < 7 µg/L)		MPHD	
		Male	Female	Male	Female
GH start					
	N	10131	4722	3451	1767
Peak GH levels to provocation tests	µg/L	4.3	4.3	4.3	4.5
Age at GH start	yrs	10.3	9.5*	9.7	9.1*
Height at GH start	SDS	-2.8	-3.2*	-3.3	-3.6*
Birth					
Gestational age	wks	39.0	39.0	38.8	38.9
Birth Weight	SDS	-0.7	-0.7	-0.6	-0.7
Birth Head Circumference	SDS	-0.2	-0.2	0.1	-0.0
Normal delivery	%	77.8	78.7	68.5	74.8*
+ MRI normal	%	84.0	82.7	69.0	69.7
Peak GH levels (normal delivery)	µg/L	4.3	4.3	4.7	4.5
Breech delivery	%	3.5	2.9	15.3	6.7*
+ MRI normal	%	72.5	83.9	36.6	40.7
Peak GH levels (breech delivery)	µg/L	3.8	4.2	2.7	2.6

Data are expressed as mean; * = p < 0.001 in M vs F

- Peak GH is lowest in the breech groups with MPHD (2.8±2.4 ng/ml) vs vaginal delivery MPHD (4.6±3.0 ng/ml)
- Breech delivery in males with MPHD is more frequent, however they do not appear to have more pituitary pathology as assessed by MRI

Conclusions

- A higher percentage of patients with MPHD were born by breech delivery with male predominance.
- More frequent MRI abnormalities were reported in MPHD patients without gender difference.

References

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