CURRENT GROWTH HORMONE PRACTICES IN BELGIUM FOR THE TREATMENT OF SHORT CHILDREN BORN SMALL FOR GESTATIONAL AGE

M. Thomas[1], K. Casteels[2], A. Rochtus[2], S. van der Straaten[3], S. Van Aken[3], J. Fudvoye[4], E. Boros[5], H. Dotremont[6], J. Vanbesien[7], T. Mouraux[8], O. Chivu[9], K. Logghe[10], N. Reynaert[11], G. Massa[12], S. Depoorter[13], D. Klink[14], M. Becker[15], P. Lysy[16], J. De Schepper[7,3]

[1]BESPEED (Belgian Endocrine Society for Pediatric Endocrinology), Bruxelles, [2]UZ Leuven, Leuven, [3]UZ Gent, Gent, [4]CHU Liège, Liège, [5]HUDERF, Bruxelles, [6]UZ Antwerpen, Antwerpen, [7]UZ Brussel, Brussel, [8]CHU UCL Namur, Yvoir, [9]Clinique CHC Montlégia, Liège, [10]AZ Delta, Roeselaere, [11]Ziekenhuis Oost-Limburg, Genk, [12]Jessa Ziekenhuis, Hasselt, [13]AZ Sint-Jan, Brugge, [14]ZNA Koningin Paola Kinderziekenhuis, Antwerpen, Belgium [15]Centre Hospitalier de Luxembourg, Luxembourg, Luxembourg [16]Cliniques Universitaires Saint-Luc, Bruxelles, Belgium

ESPE 2021
The 59th Annual Meeting Online
22-26 September 2021

INTRODUCTION

Recombinant growth hormone (GH) is reimbursed for the treatment of short stature (<-2.5 Z-score) in children born small for gestational age (SGA) without postnatal catch-up growth, aged ≥ 4 years with a height Z-score >1 below mid-parental height (MPH).

AIM

To determine the current GH prescribing practices by pediatric endocrinologists for SGA related short stature and document the percentages of treated children at risk for a poor adult height outcome.

PATIENTS AND METHODS

Clinical and auxological data of 146 short children were available on a total of 157 children who started a GH therapy in 2017 and 2018 for SGA related short stature. Data were retrieved from BELGROW, a national database for GH treated children held by the BESPEED.

Patients were followed by pediatric endocrinologists in 15 hospitals.

References used for height and weight Z-score calculations were:

- At birth: Niklasson, 1991 (if GA >28.5 weeks)
  Intergrowth, 2018 (if GA <28.5 weeks)
- At start GH: Roelants, 2004.

Mid-parental height (MPH) SDS was calculated as father's height SDS + mother's height SDS)/2.

Results are presented as median (P10; P90) or percentages.

Age at start GH > 11 years, height Z-score <-3 at start and having a father/mother with a height Z-score <-2 (shortest parental height: SPH) were defined as predictive parameters of poor adult height outcome after GH therapy.

RESULTS

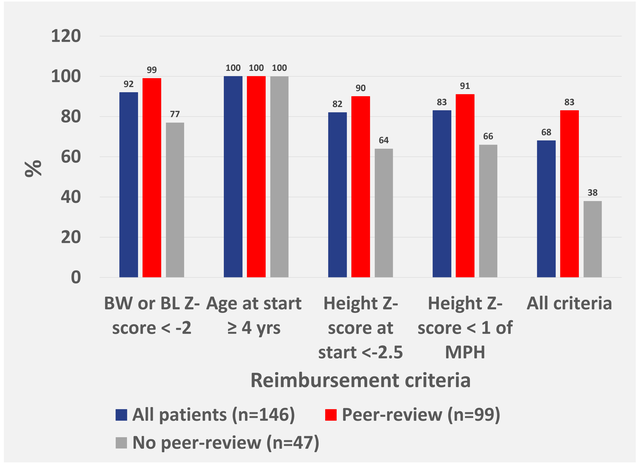

Fig.1 *Percentage of SGA patients fulfilling the reimbursement criteria*

	Peer-review (n=99)	No peer-review (n=47)	P value
Males	51 (51%)	21 (45%)	NS
Birth weight (SDS)	-2.2 (-3.3; -1.2)	-2.3 (-3.9; -0.9)	NS
MPH (SDS)	-1.1 (-2.0; 0.0)	-1.0 (-2.6; 0.7)	NS
Age at start GH	7.9 (4.6; 12.8)	9.4 (4.6; 13.2)	NS
Height at start	-3.0 (-4.0; -2.4)	-2.7 (-3.5; -1.7)	p=0.0005
Weight at start	-3.2 (-4.8; -1.7)	-2.4 (-3.8; -1.1)	p=0.017
Prepubertal (%)	82%	64%	p=0.005
GH dose (µg/kg/day)	36 (24; 55)	36 (29; 40)	NS

Table 1. *Comparison of clinical data of SGA patients with and without peer-review*

Clinical characteristics	N (%) or Median (P10 – P90)
Males	53 (53%)
Age at start GH	7.9 (4.5; 13.3)
Height at start	-3.1 (-4.0; -2.6)
Height at start corr. for MPH	-2.0 (-3.3; -1.3)
Weight at start	-3.3 (-4.8; -1.7)
BMI at start	-1.3 (-3.1; 0.3)
GH dose (µg/kg/day)	36 (29; 42)

Table 2. *Clinical data of the patients fulfilling all the reimbursement criteria (n = 100)*

In total, 99 patients started GH therapy after peer-review of the files organized by the BESPEED.
100 (68%) patients fulfilled strictly all the reimbursement criteria (figure 1). Not presenting a height Z-score <-2.5 was the most frequent aberration (18%). Patients whose files were peer-reviewed had a higher reimbursement criteria agreement (83% vs 38%) (figure 1), were also shorter and lighter at start of GH and had more often a prepubertal status (82% vs 64%) (table 1).

Among the 100 patients respecting strictly all reimbursement criteria, 52 (52%) had a height Z-score <-3 and 27 (27%) a SPH Z-score <-2, whereas 28 (28%) started treatment after 11 years.

CONCLUSIONS

Currently, GH is prescribed in patients with SGA related short stature in as many girls as boys, but with a quarter starting during adolescence, more than a half having a severe height deficit and a quarter with a father or a mother with a short stature, putting them at risk for a poor outcome.

Our findings highlight the utility of a peer review system and the ongoing need to raise awareness for earlier referral to pediatric endocrinologists of short SGA children in order to obtain a better adult height outcome.

REFERENCES

1. Niklasson A. et al. An update of the Swedish reference standards for weight, length and head circumference at birth for given gestational age (1977-1981). Acta Paediatrica Scandinavica, 1991;80:756–762.
2. Papageorghiou A.T. et al. The INTERGROWTH-21st fetal growth standards: toward the global integration of pregnancy and pediatric care. Am J Obstet Gynecol, 2018;218(2S):S630-S640. doi: 10.1016/j.ajog.2018.01.011.
3. Roelants M. et al. References for growth and pubertal development from birth to 21 years in Flanders, Belgium. Annals of Human Biology, 2009;6:680–694.
4. Ranke B. et al. Height at start, first year growth response and cause of shortness at birth are major determinants of adult height outcomes of short children born small for gestional age and Silver-Russel syndrome treated with growth hormone; analysis of data from KIGS. Horm Res Paediatr, 2010;74:259-266.
5. Van Pareren Y et al. Adult height after long-term, continuous growth hormone (GH) treatment in short children born small for gestational age: results of a randomized, double-blind, dose-response GH trial. J Clin Endocrinol Metab. 2003 Aug;88(8):3584-90. doi: 10.1210/jc.2002-021172.

CONTACT INFORMATION

muriel.thomas@scarlet.be; jean.deschepper@uzbrussel.be