Are there any regional differences in the clinical presentation of adult growth hormone deficient patients?

Adult growth hormone deficiency (AGHD) is characterized by an adverse cardiovascular metabolic profile, altered body composition reflected in reduced muscle strength and mass, visceral obesity, decreased bone mass and an impairment in quality of life. Nevertheless, the characterization of severe AGHD patients is not straightforward since there are some discrepancies among the different data series published. The main question is why.

Possible explanations include: not enough blinded, randomized, placebo-controlled trials, different methodological evaluations, different degrees of GH deficiency (GHD) and possible bias in some systematic reviews. It is well known that gender, childhood onset and adult onset of AGHD, etiology and time elapsed between the onset of the deficiency and the time of evaluation of patients contribute to the aforementioned discrepancies. An additional factor to be considered is the heterogeneity of the population studied in the different trials. Thus, different ethnic and regional influences have not been deeply studied to date.

In this issue of the journal, Bangdar et al., report the first study providing data about adult onset GHD in the Asian Indian population. In a population of 30 AGHD patients and 30 matched controls, the authors observed that most of the patients presented abnormal body composition with central obesity and poor quality of life. They point out that patients older than 45 years of age of both sexes showed no bone mass and lipid abnormalities as compared to controls, while a low bone mineral density and an abnormal lipid profile was observed only in female patients under 45 years of age. They also observed that cardiac diastolic dysfunction was present only in females. Then, the authors conclude that females younger than 45 years would benefit most with GH treatment.

The abnormality in body composition with truncal obesity and increased fat mass, as well as the impairment in quality of life was a consistent finding in most studies. However, many papers, including ours, have shown a considerable percentage of AGHD patients with remarkable alterations in lipid profile independently of gender, age and time of onset of GHD. Regarding cardiac function, a frequent, though not consistent, finding is the presence of diastolic dysfunction in AGHD reported in up to 65% of cases, depending on the study. In our experience, we found a large number of patients with prolonged pattern in adult onset GHD. As the prolonged diastolic pattern is frequently observed during ageing, a relatively early impairment of diastolic function is likely in these patients.

Concerning the different degrees of impairment of bone mass and structure, they depend not only on GHD but also on the association with other pituitary deficiencies and their treatment. The different variables studied (bone mineral content [BMC], areal bone mineral density [BMD] and volumetric BM D) also contribute to the discrepancies in the interpretation of results among different investigations. In most studies both BMD and BMC have been used, however, prospective studies have based their fracture predictions mainly on BMD. It is worth mentioning that measurement by DEXA underestimates volumetric density when the size of bones is small.

There is a known relationship between GH levels and alterations in carbohydrate metabolism. However, GH effects on fasting glucose and insulin vary among different studies. In the present paper, Bangdar et al., point out that their patients showed no statistically significant difference between glucose and insulin while HOMA IR tended to be higher in patients as compared to controls. These authors state that Asian Indian people have a unique body composition with...
greater waist circumference, excess truncal body fat and insulin resistance for a given body mass index (BMI) and thus have a greater central obesity when compared with Caucasians. This hypothesis reinforces the need to perform large studies in different ethnic populations and to consider the probable importance of regional diet habits too.

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References