Systematic Screening Reveals Large Number of Undiagnosed and Untreated Cardiovascular Risk Factors in Adults with Prader-Willi Syndrome

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INTRODUCTION

Prader-Willi syndrome (PWS) is a complex hypothalamic disorder, combining hypotonia, intellectual disability (ID), pituitary hormone deficiencies and hyperphagia. In PWS, up to 3% of patients die every year. In half of the patients, the cause of death is obesity related and / or of cardiovascular origin. Obesity is caused by hyperphagia combined with a low energy expenditure. Untreated hormone deficiencies like hypogonadism and hypothyroidism can cause low muscle mass and low basal rest metabolism (BRM) leading to this low energy expenditure. Patients with PWS should exercise one hour daily to compensate for their low BRM. However, hormone deficiencies usually cause fatigue, leading to exercise intolerance. Musculoskeletal and / or behavioral problems can also cause reduced physical activity. The subsequent sedentary lifestyle can induce cardiovascular risk factors like hypertension, hypercholesterolemia and diabetes mellitus (DM). Another risk factor often present in PWS is sleep apnea (SA). SA can lead to pulmonary hypertension and further increase in obesity.
These health problems often remain unnoticed and untreated, which is partly due to the behavioral phenotype of PWS. However, if left untreated, these risk factors can cause cardiovascular complications leading to hospital admission or even death. To reveal yet undiagnosed health problems, we performed a systematic health screening among adults with PWS.

METHODS

We systematically screened 115 adults with PWS (mean age 31.4 ± 12.1y, mean BMI 31.8 ± 9.5kg/m2) for the presence of undiagnosed health problems and cardiovascular risk factors. Based on a medical questionnaire, medical file search, extensive interview, thorough physical examination and biochemical measurements we made an overview of the undiagnosed health problems in adults with PWS. If possible, we performed polygraphy to test for SA.

RESULTS

Undiagnosed health problems (hypertension, DM, hypercholesterolemia, SA, hypothyroidism, scoliosis, vitamin D deficiency and hypogonadism) were present in 61% of the patients. 24% had multiple undiagnosed health problems simultaneously. All males and 93% of females had hypogonadism and 17% had hypothyroidism. Hypertension and / or hypercholesterolemia were present in one fifth and DM was present in 17%. One-third of patients was not on a diet and 22% exercised less than 30 minutes a day. SA was present in 20 of 28 patients tested.

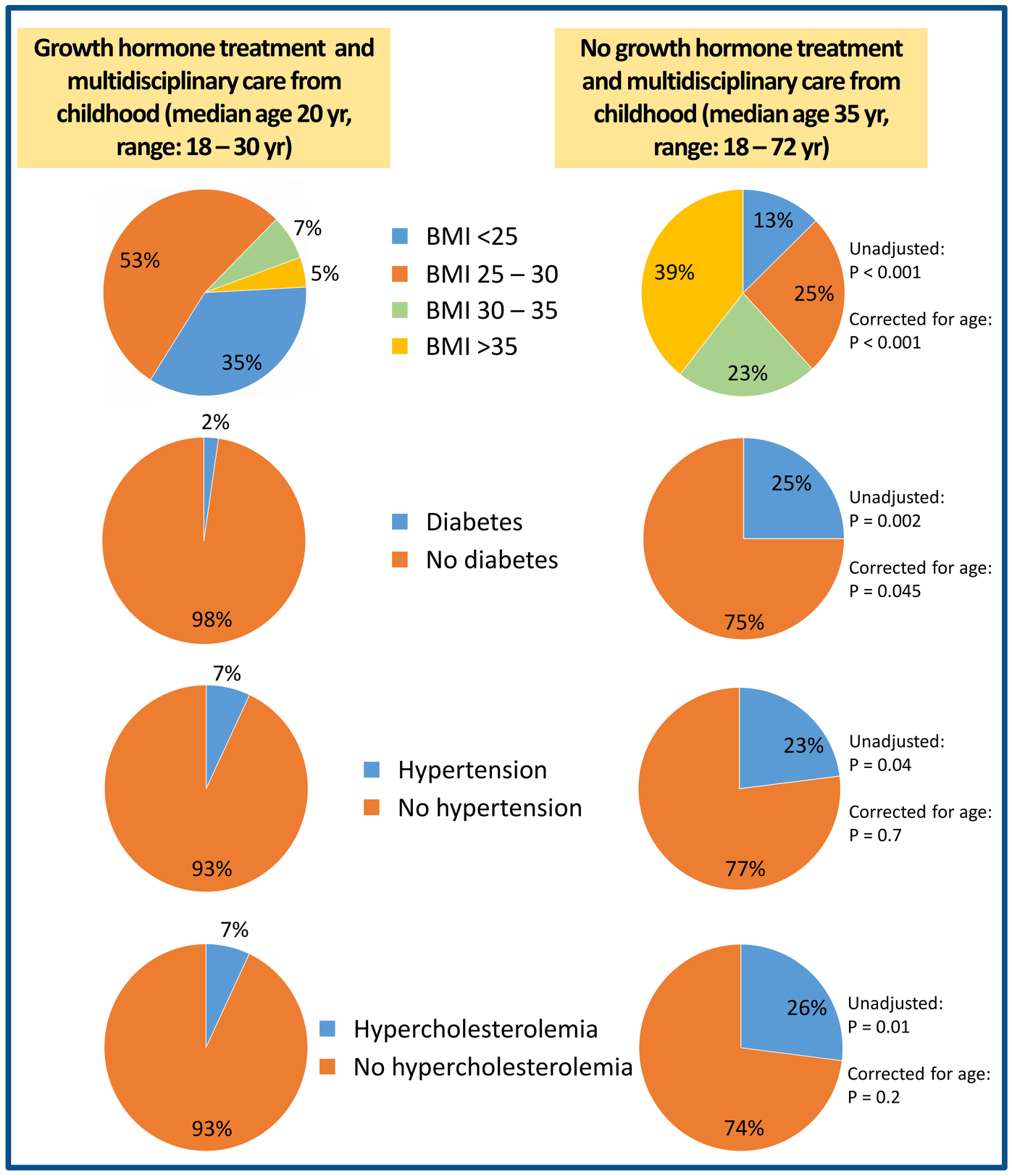

Fig. 2 Differences between patients with and without growth hormone treatment and multidisciplinary care from childhood

CONCLUSION

We detected a striking number of undiagnosed health problems among adults with PWS which, if left untreated, can pose a serious health threat. Systematic screening is needed to detect these problems in an early phase. This will prevent burdensome and expensive complications and might even reduce mortality in this vulnerable patient population.

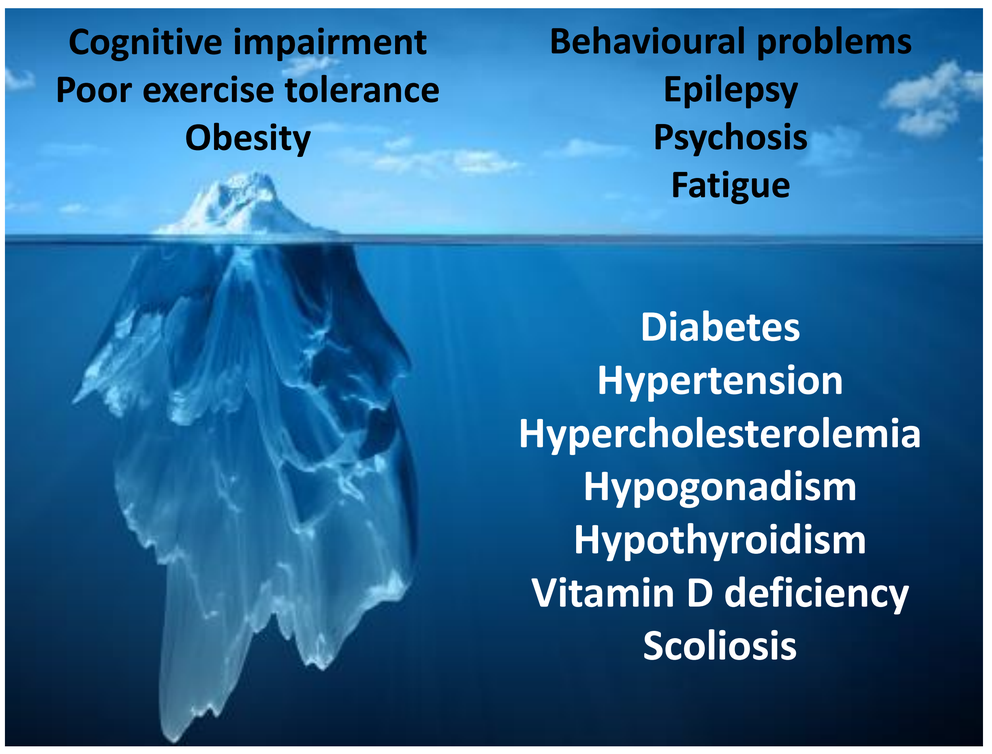

Fig. 1 The Iceberg of problems in PWS

Health problems	Prevalence (%)
Physical problems	
Hypogonadism	
Males	100
Females	93
Scoliosis	74
Vitamin D deficiency	78
Daytime sleepiness	39
Fatigue	22
Hypothyroidism	17
Lifestyle	
Increasing weight	41
No diet	34
Lack of exercise (< 30 min per day)	22
Behavioural and psychological problems	
Uncontrolled behavioural problems	51
Preoccupation with food	46
Temper tantrums	38
Psychosis	16
Pica	9

Table 1 Prevalence of health problems in 115 adults with PWS

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