Impaired aerobic exercise adaptation in children and adolescents with craniopharyngioma is associated with hypothalamic involvement

Titre	Impaired aerobic exercise adaptation in children and adolescents with craniopharyngioma is associated with hypothalamic involvement
Type de publication	Article de revue
Auteur	Piguel, X. [1], Abraham, Pierre [2], Bouhours-Nouet, Natacha [3], Gatelais, F. [4], Dufresne, S. [5], Rouleau, S. [6], Coutant, Régis [7]
Editeur	BioScientifica
Type	Article scientifique dans une revue à comité de lecture
Année	2011
Langue	Anglais
Date	2011
Numéro	2
Pagination	215 - 22
Volume	166
Titre de la revue	European Journal of Endocrinology
ISSN	1479-683X
Mots-clés	Adaptation, Physiological/physiology [8], Adolescent [9], Child [10], Craniopharyngioma/drug therapy/epidemiology/pathology/physiopathology [11], Exercise Test [12], Exercise Tolerance/physiology [13], Exercise/physiology [14], Female [15], Hormone Replacement Therapy [16], Humans [17], Hypothalamic Neoplasms/drug therapy/epidemiology/physiopathology/secondary [18], Hypothalamus/pathology/physiopathology [19], Male [20], Pituitary Hormones/therapeutic use [21], Pituitary Neoplasms/drug therapy/epidemiology/pathology/physiopathology [22]

Résumé en anglais	OBJECTIVE: Many patients treated for craniopharyngioma (CP) complain of a relative incapacity for physical activity. Whether this is due to an objective decrease in adaptation to exercise is unclear. We assessed exercise tolerance in children with surgically treated CP and appropriate pituitary hormone replacement therapy compared with healthy controls and we examined the potential relationships with hypothalamic involvement, GH replacement, and the catecholamine deficiency frequently observed in these subjects. DESIGN AND METHODS: Seventeen subjects (12 males and five females) with CP and 22 healthy controls (14 males and eight females) aged 15.3+/-2.5 years (7.3-18 years) underwent a standardized cycle ergometer test. Maximum aerobic capacity was expressed as the ratio of VO(2max) to fat-free mass (VO(2max)/FFM), a measure independent of age and fat mass in children. RESULTS: VO(2max)/FFM was 20% lower in children with CP compared with controls (P<0.05), even after adjustment for gender. Children with hypothalamic involvement (n=10) had a higher percentage of fat mass (P<0.05) than those without hypothalamic involvement (n=7) and lower VO(2max)/FFM (P<0.05), whereas children without hypothalamic involvement had VO(2max)/FFM close to that of controls (P>0.05). GH treatment was associated with a significant positive effect on aerobic capacity (P<0.05) only in the absence of hypothalamic involvement. No relationship was found between exercise capacity parameters and daily urine epinephrine excretion or epinephrine peak response to insulin-induced hypoglycemia. CONCLUSIONS: Children with CP have a decrease in aerobic capacity mainly related to hypothalamic involvement. The hypothalamic factors altering aerobic capacity remain to be determined.
URL de la notice	http://okina.univ-angers.fr/publications/ua8280 [23]
DOI	10.1530/EJE-11-0742 [24]
Lien vers le document	http://dx.doi.org/10.1530/EJE-11-0742 [24]
Titre abrégé	Eur J Endocrinol

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