THE CLINICAL AND BIOCHEMICAL SPECTRUM OF PITUITARY LESIONS IN CHILDREN COMPARED TO ADULTS: EXPERIENCE FROM A SINGLE TERTIARY CENTER

E. GALAZZI[1], S. CARRARA[2], D. SORANNA[3], A. ZAMBON[3,4], L. M. FATTI[1], M. MORO[1], L. PERSANI[1,2]

1. Division of Endocrine and Metabolic Diseases & Laboratory of Endocrine and Metabolic Research, IRCCS Istituto Auxologico Italiano, Milan,, Italy
2. Department of Clinical Sciences and Community Health, University of Milan, Milan,, Italy
3. Biostatistics Unit, IRCCS Istituto Auxologico Italiano, Milan,, Italy
4. Department of Statistics and Quantitative Methods, University of Milano-Bicocca, Milan,, Italy

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

INTRODUCTION

Pituitary gland may be affected by a wide spectrum of congenital or acquired lesions (neoplastic, inflammatory, traumatic, etc) throughout life. Whether pituitary lesions' impact differs depending on their finding in paediatric/adult age is unclear.

AIM

To assess clinical and biochemical differences between children's and adults' pituitary lesions. To compare similar lesions as empty sellas or small anterior pituitaries between children and adults.

METHOD

- This monocentric retrospective study included 350 patients with pituitary lesions, among which 55 were children (< 18 years old). The mean age at diagnosis in children was 12.2±3.7 years (range 2.1-17.9), while in adults was 48.7±15.5 years (range 18.0-89.7).
- All patients underwent a complete pituitary function assessment.
- Follow-up data was available for 50 children and 248 adults, with a median of 54.6 months. Boys and girls over 14 and 13 years respectively had their somatotrope axis re-tested after pubertal progression.

RESULTS

• The diagnosis of a pituitary lesion in children mostly followed poor growth or pubertal delay, while in adults was more often an incidental radiological finding.

• Children with pituitary lesions presented more frequently with at least one hormonal deficit compared to adults (89.1% vs 48.8%, p<0.0001), especially GH deficiency (83.3% vs 14.8%, p<0.0001). [**Table 1**]

• At diagnosis, similar pituitary lesions such as empty sellas and small anterior pituitaries presented more likely with hormonal deficiencies in children compared to adults (94.1% vs 51.1%, p<0.0001). [**Table 2**]

• During follow-up, in similar pituitary lesions such as empty sellas and small anterior pituitaries, pituitary function significantly improved overall in children compared to adults (82.4% versus 10.5%, p<0.0001), especially considering the somatotropic axis (82.4% vs 33.3%, p=0.0048). [**Table 2** and **Fig. 1**]

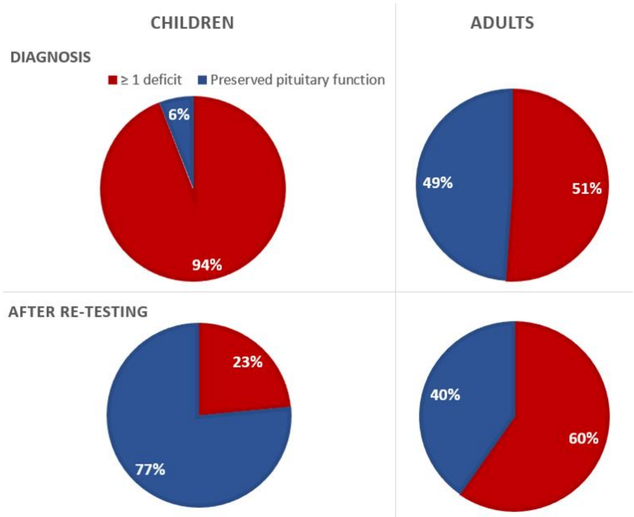
Table 1 *Pituitary function of children and adults with pituitary lesions taken overall*

	Children (n=55)	Adults (n=295)	p-value
Male sex	38 (69,1%)	110 (37,3%)	<0.0001
Endocrine-driven diagnosis	51 (92,7%)	161 (54,6%)	<0.0001
Hypopituitarism	49 (89,1%)	144 (48,8%)	<0.0001
GH deficiency	45 (83,3%)	42 (14,8%)	<0.0001
Central hypogonadism	12 (23,1%)	99 (36,3%)	0.0661
Central hypothyroidism	6 (10,9%)	62 (21,5%)	0.072
Central hypocortisolism	7 (13,5%)	38 (12,9%)	0.9156
Diabetes insipidus	1 (1,8%)	13 (4,4%)	0.3684
Prolactin deficiency	3 (7,3%)	12 (4,2%)	0.3778

Table 2 – *Pituitary function of children and adults for similar lesions (empty sellas and small anterior pituitaries)*

	Children (n=34 at diagnosis, n= 17 at follow-up)	Adults (n=88 at diagnosis, n= 67 at follow-up)	p-value
Hypopituitarism			
At diagnosis	32/34 (94,1%)	45/88 (51,1%)	<0.0001
After re-testing	4/17 (23%)	40/67 (59,7%)	0.0077
Improvement of			
Global pituitary function	14/17 (82,4%)	7/67 (10,5%)	<0.0001
Somatotropic axis	14/17 (82,4%)	5/15 (33,3%)	0.0048

Figure 1
Pituitary function at diagnosis and during follow-up of children and adults with empty sellas and small anterior pituitaries



CONCLUSIONS

- Pituitary lesions present more likely with pituitary deficiencies in children than in adults, especially with growth defects and pubertal delay. Instead, despite the higher prevalence of macrolesions and empty sellas, adults frequently have a preserved pituitary function.
- At variance with adult patients, children with empty sellas and small anterior pituitaries typically present functional pituitary defects which however require re-evaluation after puberty onset.

REFERENCES

1. **Higham CE et al**. Hypopituitarism. *Lancet*. 2016;388(10058):2403-2415.
2. **Prodam F et al.** Insights into non-classic and emerging causes of hypopituitarism. *Nat Rev Endocrinol*. 2021;17(2):114-129.
3. **Chapman PR et al.** Neuroimaging of the Pituitary Gland: Practical Anatomy and Pathology. *Radiol Clin North Am*. 2020;58(6):1115-1133.
4. **Doknić M et al.** Etiology of Hypopituitarism in Adult Patients: The Experience of a Single Center Database in the Serbian Population. *Int J Endocrinol*. 2017;2017.
5. **Fernandez-Rodriguez E et al.** Epidemiology, mortality rate and survival in a homogeneous population of hypopituitary patients. *Clin Endocrinol (Oxf)*. 2013;78(2):278-284.
6. **Chiloiro S et al.** Diagnosis of endocrine disease: Primary empty sella: A comprehensive review. *Eur J Endocrinol*. 2017;177(6):R275-R285.
7. **Argyropoulou MI et al**. MRI of the hypothalamic-pituitary axis in children. *Pediatr Radiol*. 2005;35(11):1045-1055.
8. **Zucchini S et al.** Primary empty sella: differences and similarities between children and adults. *Acta Pædiatrica*. 1995;84(12):1382-1385.
9. **Shareef M et al.** Pituitary incidentalomas in paediatric population: Incidence and characteristics. *Clin Endocrinol (Oxf)*. 2021;94(2):269-276.

ACKNOWLEDGEMENTS

Silvia Carrara in complete autonomy collected all patient data from hospital archives of Istituto Auxologico Italiano (Milano).

CONTACT INFORMATION

e.galazzi@auxologico.it

silvia.carrara@unimi.it

persani@auxologico.it