Cushing's Disease in a 7-year-boy due to corticotroph cell hyperplasia.

Dineen R[1], McGurren K[1], Javadpour M[1], Costigan C[2], Agha A[1]

1.Departments of Endocrinology and Neurosurgery, Beaumont Hospital 2. Department of Paediatric Endocrinology, Our Ladys Hospital for Sick Children,Crumlin, Dublin, Ireland

Introduction

- Cushing's disease is the most common cause of endogenous Cushing's syndrome in children after the age of 5[1]
- It accounts for 70-85% of all paediatric Cushing's syndrome.
- In childhood it is male predominant, which equilibrates at puberty, and becomes female predominant as adults.
- The majority of Cushing's disease are caused by an ACTH-secreting pituitary corticotroph adenoma.
- Ectopic ACTH is extremely rare.
- Corticotroph cell hyperplasia has only been convincingly shown in two previous cases of paediatric Cushings disease[2].

Clinical Presentation & Examination

- 7- year old presented with a ten-month history of obesity, hirsutism and growth retardation.
- He was a term baby and reached all appropriate developmental milestones.
- No specific drugs had been prescribed previously.

- ✓ Moon face
- ✓ Facial plethora
- ✓ Buffalo hump
- ✓ Central obesity
- ✓ Hirsutism
- ✓ Striae

Hgt: 2.5SD below age-mean

Wgt: 98th percentile

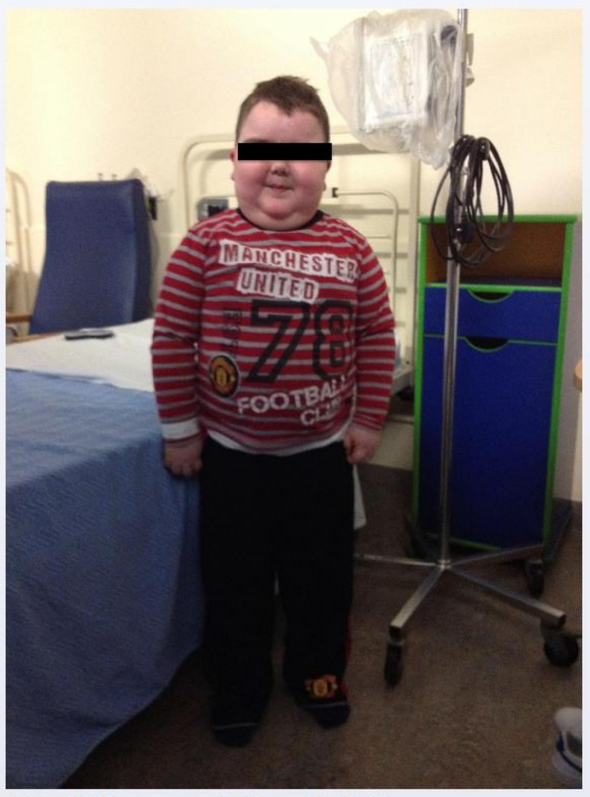


Fig 1.At presentation Oct'13.

Fig 2.Post-op follow-up Jun'14.

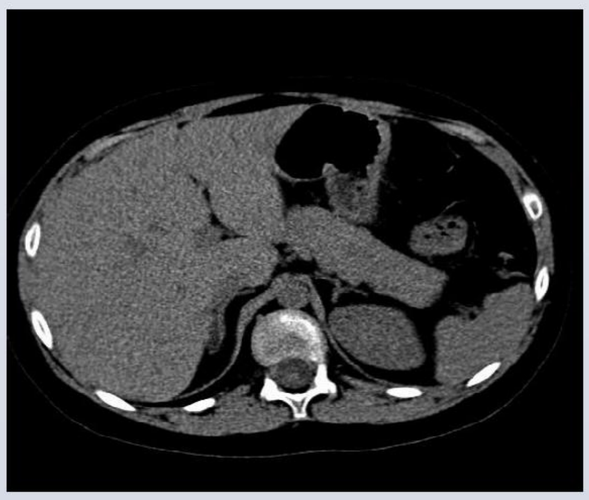
Initial investigations

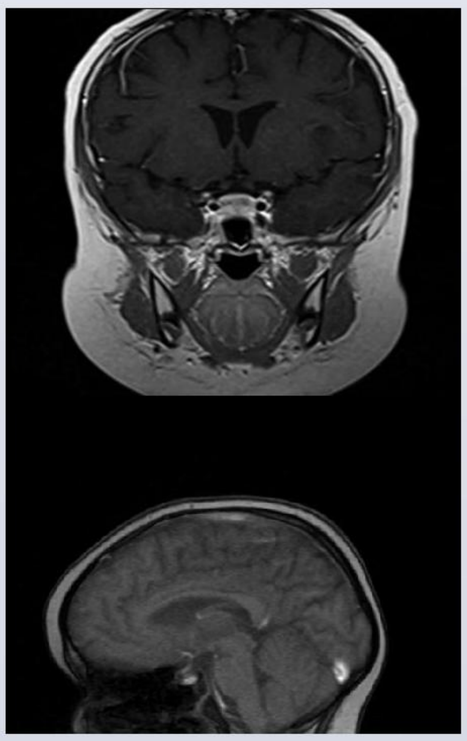
8am Cortisol	1159nmol/L (185-624nmol/L)	IGF 1	257.20 (46-443) ng/ml
(8am)ACTH	488.0 pg/ml (10-60pg/ml)	Prolactin	2275 mIU/L
Midnight Salivary Cortisol	13.9nmol/L (<2.6nmol/L)	FSH	1.1mIU/ml
Midnight Salivary Cortisone	69.2nmol/L (<18nmol/L)	LH	0.4mIU/ml
Urine Total Volume	1010mL/24hrs	FBG	5.6mmol/mol
Urinary Free Cortisol	232nmol/24hrs	HbA1c	32mmol/mol
		FT4	15.4 pmol/L
		TSH	1.04 mIU/L
		Testosterone	0.9nmol/L

Table 1 & 2 Endocrine testing at presentation

Diagnostic Imaging

- Noncontrast CT Adrenals.
& MRI pituitary: unremarkable





Inferior Petrosal Sinus Sampling

ACTH Sample (pg/ml)	Peripheral	Left IPS	Right IPS	Highest IPS : peripheral ratio	Lateralization ratio
Basal	142	159	142	159/142=1.1	
Post CRH					
3min	676	630	768		
10min	488	>1950	560	>1950/488=>4	>1950/560=>3.5
15min		1176	602		

Management

- Underwent Transphenoidal Surgery 3-months post IPSS confirmation of ACTH dependant Cushings syndrome.
- Abnormal tissue was resected from the left side of the pituitary.
- **Histopathology revealed no adenoma but intense immunostaining for ACTH consistent with corticotroph hyperplasia.**
- On the fourth day post-operation, am cortisol was **39nmol/L**
- **Three months post TSS,** he remained hypocortisolaemic on hydrocortisone with significant clinical improvement.

Conclusion

- **Early diagnosis of paediatric Cushings disease remains a challenge.**
- **Definitive cure can be achieved by transphenoidal pituitary surgery but success rates vary from 45% to 78% in report series[3].**
- **This case ilustrates that pediatric Cushing's disease may be caused,albeit, rarely by corticotroph hyperplasia.**
- **The natural history of this entity is unknown,hence careful follow up is necessary.**

References

1. Storr HL, Chan LF, Grossman AB, Savage MO. **Paediatric Cushing's Disease: Epidemiology, Investigation and Therapeutic Advances**. Trends Endocrinol Metab. 2007
2. Mustila T,Keskinen P,Terho M,Huovinen S, Saha MT.**Pediatric Cushing's disease due to pituitary hyperplasia**. J Pediatr Endocrinol Metab. 2011;24(3-4):191-2
3. Storr HL, Alexandraki KI, Martin L, Isidori AM, Kaltsas G, Monson JP, et al. **Comparisons in the epidemiology, diagnostic features and cure rate by transsphenoidal therapy between paediatric and adult Cushing's disease**. Eur J Endocrinol. 2011

17 ECE 1230--EP

Clinical Cases Pituitary/Adrenal

Rosemary Dineen

DOI: 10.3252/pso.eu.17ece.2015

Poster presented at: ECE2015 16-20 May 2015 DUBLIN, IRELAND 17th EUROPEAN CONGRESS OF ENDOCRINOLOGY

PosterSessionOnline.com