Society for Endocrinology

Imperial College London

Imperial Pituitary Masterclass Meeting

Monday 18th September 2023

IMPERIAL PITUITARY MASTERCLASS MEETING 2023

Venue: Charing Cross Hospital, Imperial College Healthcare NHS Trust, London

09.00 – 09:30 Registration.

SESSION 1

CHAIRS: Dr Sagen Zac-Varghese, Lister Hospital, East and North Hertfordshire NHS Trust.
Mr Nigel Mendoza, Imperial College Healthcare NHS Trust, London.

09:30 - 10.00 *Persistent, low disease burden in acromegaly – what are our options?*
Dr Robert Murray, Leeds Teaching Hospitals NHS Trust.

10:00 - 10:20 *Acromegaly – in remission or not?*
N Lakshitha de Silva, D Papadopoulou, N Mendoza, N Martin.
Imperial College Healthcare NHS Trust, London.

10:20 - 10:40 *Surgery as first line treatment for prolactinoma.*
M Saad, N Martin, E Lim, N Mendoza, A Falconer, C Limback-Stanic, K Meeran.
Imperial College Healthcare NHS Trust, London.

10:40 - 11:00 *Proton beam therapy in germinoma – a superior treatment for endocrine recovery?*
I Haq, S Iftikhar, A Falinska, D Russell-Jones.
Royal Surrey NHS Foundation Trust, Guildford.

11:00 - 11:20 *Primary Amenorrhoea - A clinical quandary.*
X Cuñago, S Arora, S Mannath, Y Abdelgader, M Scaramozzino , Hosna Begum.
United Lincolnshire Hospitals NHS Trust, Lincolnshire, UK, 'La Madonnina' Reggio Calabria, Italy.

11:20 - 11:50 TEA & COFFEE BREAK

SESSION 2

CHAIRS: Dr Agnieszka Falinska, Royal Surrey NHS Foundation Trust, Guildford.
Mr Ramesh Nair, Imperial College Healthcare NHS Trust, London.

11:50 - 12:10 *Anterior to posterior pituitary dysfunction - crossing the DI-Vide.*
N Karimaghaei, A Thomsen, I Mitra, R Scott, A Wren.
Chelsea and Westminster Hospital NHS Trust, London.

12:10 - 12:30 *Beyond the pituitary gland.*
K Koysombat, B Jones, F Tona, Z Jaunmuktane, R Nair, M Seckl, E Hatfield, N Martin, K Meeran.
Imperial College Healthcare NHS Trust, University College London Hospitals NHS Foundation Trust

12:30 - 12:50 *The difficulties in managing AVP deficiency following pituitary apoplexy.*
K Benedict, C Russell, H Darbon, F Tasnim, AKuganesan, JL Daurat, S Zac-Varghese.
East and North Hertfordshire NHS Trust.

12:50 - 13:10 *Delayed diagnosis of pituitary adenoma in a patient with hypereosinophilic syndrome and a new diagnosis of myasthenia gravis*.
B Mahamud, A Mohamed, R Suthar, M Dram, G Mlawa.
Barking, Havering and Redbridge University Hospitals NHS Trust.

13:10 - 14:10 LUNCH

SESSION 3

CHAIRS: Mrs Debbie Papadopoulou, Imperial College Healthcare NHS Trust, London.
Dr Emma Hatfield, Imperial College Healthcare NHS Trust, London.

14:10 - 14.40 *A practical guide to understanding pituitary histology.*
Prof Zane Jaunmuktane, University College London Hospitals NHS Foundation Trust

14:40 - 15:00 *IgG4 Hypophysitis and Thyroid Abnormalities*.
S El Abd, N Butt.
Queen Alexandra Hospital, Portsmouth Hospitals NHS Trust

15:00 - 15:20 *Aseptic meningitis due to craniopharyngioma.*
V Smout, N Liebenberg, S Iftikhar, Z Bawlchhim, R Garesse, A Falinska, D Russell-Jones.
Royal Surrey County Hospital, Guildford.

15:20 - 15:40 *A very rare case of TSH-secreting pituitary adenoma*.
HM Mon, V Praveena, M Martineau.
West Middlesex University Hospital Chelsea and Westminster Hospital NHS Foundation Trust.

15:40 - 16:00 *A rare macroadenoma mimic.*
E Hyams, F Wernig.
Imperial College Healthcare NHS Trust, London.

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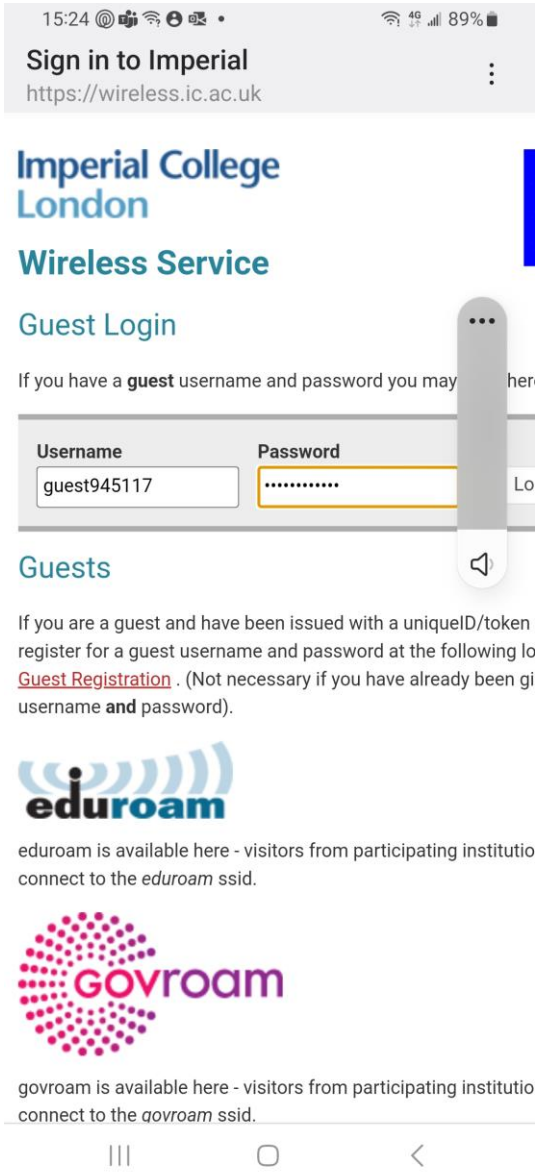

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Acromegaly – in remission or not?

N Lakshitha de Silva, D Papadopoulou, N Mendoza, N Martin.
Imperial College Healthcare NHS Trust, London.

Introduction:
Biochemical normalisation of insulin-like growth factor-1 (IGF-1) and growth hormone (GH) levels is associated with improved mortality and morbidity in acromegaly. Treatment aims to achieve age-normalised IGF-1 level and random GH <1 µg/L.

Case presentation:
A 20-year-old man presented with headache, visual defects and carpal tunnel syndrome in 1999. He was diagnosed to have acromegaly with a large sellar and suprasellar mass causing significant optic chiasmal compression, but no cavernous sinus invasion. He underwent trans-sphenoidal surgery in 2000. Histology confirmed a pituitary neuroendocrine tumour with GH immunopositivity. He received radiotherapy in 2002 due to persistent GH excess. He developed secondary hypothyroidism and hypogonadism.

He was managed with cabergoline and lanreotide after radiotherapy with intermittent assessment of growth hormone burden. Pegvisomant was added in 2011 due to a persistently high IGF-1 but it was stopped in 2014 due to poor adherence, lanreotide and cabergoline were continued. He developed symptomatic gallstones requiring cholecystectomy in 2014 and gallstone pancreatitis in 2017. A trial of withdrawing lanreotide failed in 2017, with IGF-1 rising from 48.2 (13-50 nmol/L) to 54.2 (10.5-32 nmol/L) and lanreotide was restarted.

Four years later, he was trialled off somatostatin analogues again, with a view to assessing whether his acromegaly was in remission [prior to discontinuation: IGF-1 37.8 nmol/L (8.5-31), random GH 0.311 mcg/L)]. At this point, he was 42 years old, with no symptoms of active acromegaly. He has steadily gained weight (BMI 36 kg/m^2), with dyslipidaemia, but no diabetes, hypertension, joint or heart disease. Three hyperplastic polyps were removed during colonoscopy.

He is currently taking cabergoline 0.5 mg four times a week, levothyroxine and testosterone undecanoate.

After stopping lanreotide (but continuing cabergoline), IGF-1 levels were 45.4 (8.5-31) (at three months) and 41.4 nmol/L (at six months). Random GH levels were 0.49 and 0.16 mcg/L. MRI pituitary remains stable showing an enlarged sella which is almost empty with a small amount of pituitary tissue.

Conclusions:
Discordant GH and IGF-1 in an asymptomatic patient with treated acromegaly pose a clinical management challenge. Long-term benefits of treatment intensification for isolated mild elevation of IGF-1 should be balanced against side effects and cost of treatment.

Questions for discussion:
1. What are the possible reasons for discordant GH and IGF-1 in this patient?
2. Is his acromegaly in remission or not?
3. What is the long-term management approach to this patient?

Surgery as first line treatment for prolactinoma

M Saad[1], N Martin[1], E Lim[2], N Mendoza[3], A Falconer[4], C Limback-Stanic[5], K Meeran[1]
1 - Department of Endocrinology, Imperial College Healthcare NHS Trust, London.
2 - Department of Radiology, Imperial College Healthcare NHS Trust, London.
3 - Department of Neurosurgery, Imperial College Healthcare NHS Trust, London.
4 - Department of Clinical Oncology, Imperial College Healthcare NHS Trust, London.
5 - Department of Histopathology, Imperial College Healthcare NHS Trust, London.

A 28-year-old gentleman was referred for investigation of an elevated prolactin, checked due to symptoms of low libido and erectile dysfunction. He had background history of major depression with suicidal ideation that required admission under the Mental Health Act five years before. During that period, he had received anti-psychotic medications. He was not taking any medications at the time of his referral. Results were: prolactin 13498 mU/L (60-300 mU/L), negative macroprolactin, testosterone 9.4 nmol/L, FSH 3.5 U/L, LH 2.1 U/L. MRI pituitary revealed a large sellar and suprasellar enhancing lesion abutting but not invading the left cavernous sinus, which was not contacting or compressing the optic chiasm. The case was discussed in the Imperial Pituitary MDT. There were concerns about the use of dopamine agonist due to the patient's psychiatric history and given the clear surgical target, it was proposed that surgery could remove the tumour and achieve resolution of hyperprolactinaemia. He underwent endoscopic trans-sphenoidal surgery for removal of the prolactinoma. Post-operatively, MRI showed good post operative clearance, with no evidence of residual disease and post-operative prolactin normalised (243 mU/L). Histology showed sparsely granulated lactotroph adenoma, Ki67 index 3-4%.

Unfortunately, on further follow up the patient's serum prolactin started to rise. His libido improved after surgery but after a few months, patient described that his libido "fell off a cliff" and remained persistently low, causing relationship difficulties. Blood tests revealed prolactin 564 mU/L, testosterone 11.2 nmol/L, FSH 4.8 U/L, LH 1.2 U/L. A repeat MRI pituitary was arranged which revealed a small volume lobulated, poorly enhancing tissue related to the floor and left lateral aspect of the sella turcica/ cavernous sinus at the site of the surgical access and the original tumour. The findings were suspicious for small volume residual or recurrent disease. A cannulated prolactin series confirmed elevated prolactin: 543, 550 and 498 mU/L at 0, 60 and 120 minutes respectively. The lesion was not a clear surgical target and on discussion in the Pituitary MDT, further surgery was thought unlikely to be curative. Concerns remained about cabergoline given his previous psychiatric history. His case was discussed at the Gamma Knife MDT and it was agreed that he would be a suitable candidate for gamma knife treatment. Although his testosterone levels were normal, the patient was very keen for testosterone replacement. He was started on a low dose of topical testosterone but his libido remained poor.

The patient and his family were concerned about hypopituitarism as a consequence of gamma knife treatment, so chose to re-consider other treatment options. Most recently, the patient was reviewed in another centre, near his family home and low dose of cabergoline (0.25 mg weekly) was initiated several weeks ago with close monitoring for side effects.

Questions for discussion:

1. What monitoring is needed for cabergoline treatment given his previous psychiatric history?
2. Would the audience recommend continuing cabergoline or offering gamma knife treatment?
3. Should testosterone replacement be offered in such situations?

Proton beam therapy in germinoma – a superior treatment for endocrine recovery?

I Haq, S Iftikhar, A Falinska, D Russell-Jones.
Royal Surrey NHS Foundation Trust, Guildford.

Background

Germinomas are a rare brain tumour in children and young adults and over 90% present with diabetes insipidus, pituitary dysfunction and visual field disturbance. They have a high radiosensitivity with high cure rates using chemo and radiotherapy. Proton beam therapy (PB) is a more recent, targeted form of radiotherapy with a dosimetric advantage, delivering lower doses of radiation to normal tissues. However, the risk of endocrine dysfunction and hypopituitarism is still a common recognised sequela. This case explores the recovery of pituitary function in a young man following PB for dysgerminoma.

Case Presentation

A 24-year-old was first referred at the age of 19 for diabetes insipidus; he initially noticed extreme thirst at a high altitude whilst in South America which persisted when he returned home. He continued to suffer from fatigue, polydipsia and polyuria and reduced libido. Investigation results revealed a raised serum osmolality and reduced urine osmolality. Pituitary hormonal profile testing showed reduced levels of testosterone, elevated prolactin, elevated TSH with normal T4 and a suboptimal response to Synacthen (see table 1). He was started on cabergoline and replacement therapy comprising of desmopressin, hydrocortisone, testogel and levothyroxine. An emergency MRI showed a pineal mass and pituitary stalk thickening, suggestive of a dysgerminoma confirmed with a pineal biopsy. The patient received proton beam radiotherapy - 24GyE to the craniospinal axis followed by a boost of 16GyE to the pineal primary tumour and metastases. He recovered well post-operatively; a repeat MRI showed no further recurrence. Interestingly, over the first 12 months, his hormonal replacement was stopped apart from DDAVP and this has been sustained 3 years on; his latest investigation results show improvement to his anterior pituitary function (see table 1).

Laboratory Parameter	***Pre-treatment***	***Post-treatment (1 year)***	***Post-treatment (3 years)***	***Reference Range***
Serum osmolality (mOsm/kg)	302	-	-	275-295
Urine osmolality (mOsm/kg)	125	-	-	50-1200
Prolactin (mIU/L)	748	598	190	45-375
Testosterone (nmol/L)	3.2	12.2	15.2	8-23.2
LH (IU/L)	1.4	2.8	4.3	1-8
FSH (IU/L)	2.2	3.7	3.7	2-12
TSH (mIU/L)	5.4	4.93	3.07	0.35-4.78
T4 (µg/dL)	9	9.3	12.5	5-12
Synacthen cortisol rise (nmol/L)	272-412	314-647	-	rise to >430
9am cortisol (nmol/L)	-	365	362	140-690
IGF-1 (nmol/L)	38.5	24	21.6	40-56

Table 1 – Hormone and biomarker results before and after proton beam radiotherapy

Conclusion

In summary, the case above demonstrates a recovery of the patient's pituitary function after proton beam therapy, only requiring DDAVP and no hydrocortisone, testosterone or levothyroxine. The long-term side effects of radiotherapy are well documented, including second malignancies and adverse effects on neurocognitive abilities and endocrine function. Whilst PB is recognized as a superior form of treatment for germinomas, the rate of recurrence, endocrine dysfunction and clinical benefits are yet to be assessed fully.

Questions for discussion:

1. Is long-term endocrine recovery possible after PB? Or will he be likely to re-develop hypopituitarism?
2. Was this a case of true recovery after PBT or the effects of prolactin on LH/FSH axis and cabergoline?

Primary Amenorrhoea - A clinical quandary

X Cuñago[1], S Arora[1], S Mannath[1], Y Abdelgade[1]r, M Scaramozzino[2], Hosna Begum[1].
1 - United Lincolnshire Hospitals NHS Trust, Lincolnshire, UK.
2 - 'La Madonnina' Reggio Calabria, Italy.

Introduction
Amenorrhoea is defined as the absence of a menstrual period in a female of reproductive age. It is categorised into two types: primary and secondary.

Primary amenorrhoea is commonly defined as the absence of menarche in a female by the age of 16 years, or absence of sexual characteristics by the age of 14 years. Whereas, secondary amenorrhoea is the defined as the absence of a menstruation for three months or more in a female of reproductive age previously with regular menstrual cycles, or for six months or more for those previously with irregular cycles.
Some common causes of primary amenorrhoea are: constitutional delay, functional hypogonadotropic hypogonadism, permanent hypogonadotropic hypogonadism, primary ovarian failure/ dysgenesis (e.g. Turner syndrome and MRKH syndrome).
Primary pituitary lesions (Micro/Macro-adenomas) can cause hypogonadotropic amenorrhoea, though they more frequently are causes of secondary amenorrhoea rather than primary amenorrhoea.

Abstract
We describe the case of a 17 year old female who attended the Endocrinology clinic for assessment of primary amenorrhoea. She has no intellectual delay as she is performing well in her school and no problems in her day-to day life. Her past medical history included:

- Syndactyly, involving all 4 limbs
- Intrauterine Growth Restriction
- Small for Age

Family History: Father has Brugada Syndrome- Type 1 (Cardiac arrest and ICD in his 40s), Younger sister has Type 1 Diabetes, and maternal great aunt has syndactyly.

Examination
On examination, she appeared clinically euthyroid, with no cushingoid/ acromegalic features and had no evidence of endocrinopathies. She looked younger than her age, had Tanner Stage 3 of breast and pubic hair development. There was no hymenal bulge and has only minimal labial development. She had no dysmorphic features. Her observations were stable and BMI was 20.7.

Investigations
Blood tests:

Test	***Results***	***Reference ranges***
Full Blood Count	Unremarkable	
Liver Function Tests	Unremarkable	
Thyroid Function Tests	Unremarkable	
FSH	<0.01	
LH	<0.3	
17-beta-oestradiol	37	
Testosterone	0.8	0.5 to 2.4 nmol/L
IGF-1	29.4	17 year old (20.4 – 62.7)
Prolactin	129	102-496 mIU/L
Sex hormone binding glodulin	36	<50 years old (19-145 nmol/L)

Short Synacthen test (Baseline Cortisol)	546 (08:19 am)	
Short Synacthen test (Cortisol post Synacthen)	763 (09:15 am)	

Imaging:

- *Neuro-imaging (at 2 years of age):*
  Normal
- *MRI Brain:*
  Unremarkable
- *MRI Pelvis:*
  Showing atrophic uterus and ovaries
- *MRI Pituitary:*

Well defined nodular lesion in the midline of the pituitary parenchyma with hyperintense signal on T1 and showing hypo enhancement compared to the rest of the gland (1.0 x 0.5 x 0.4 cm), which may represent Rathke cyst or haemorrhagic pituitary adenoma.
Possible differentials: Haemorrhagic Pituitary adenoma or Rathke's cyst.

Genetics:

46XX, negative for chromosome 4q35 change.

Management

1. Regular follow ups,
2. Referral to the Specialist Adolescent Services for Gynaecology at Tertiary Centre in Nottingham,
3. Discussion in Pituitary MDT, which is happening before the Masterclass,
4. Counselling services offered to the patient and family as this might affect her mental health.

Questions for discussion:

1. Could this presentation be due a genetic syndrome? Or is it due to the space occupying lesion in pituitary?
2. The findings of syndactyly, atrophic uterus and ovaries, family history of Type 1 Diabetes, hormone assays, chromosome analysis, and the space occupying lesion in pituitary, make it a very interesting case to discuss.

Anterior to posterior pituitary dysfunction - crossing the DI-VIde

N Karimaghaei[1], A Thomsen[1], I Mitra[1], R Scott[1,2], A Wren[1,2].
1 - Chelsea and Westminster Hospital NHS Trust, London.
2 - Imperial College London.

Abstract
De novo vasopressin insufficiency (VI), formerly known as cranial Diabetes Insipidus (DI) is extremely rare in patients with pituitary adenoma who have not had biopsy or surgery and raises the question of differential diagnoses including malignancy and infective or inflammatory disease affecting the pituitary. Here we present a case of a patient initially presenting with cystic pituitary adenoma subsequently developing VI.

A 24 year old woman presented to her GP with headache and secondary amenorrhoea and was referred to neurology; MRI brain revealed a cystic pituitary lesion. Pituitary MRI demonstrated a 17mm, T1 hyper-intense proteinaceous cyst with a suprasellar component and significant displacement of the infundibulum of normal thickness. She was found to have a persistently elevated prolactin in primary care at around 900mU/l and referred to endocrinology.
Initial early morning basal pituitary function showed persistent monomeric hyperprolactinaemia (prolactin 896mU/l [100-550 mU/L]) and borderline secondary hypothyroidism (TSH 1.57 [0.3-4.2 mU/L], free T4 8.0 [9-23 pmol/L], free T3 3.3 [2.4-6 pmol/L]), but otherwise normal pituitary function. Repeat serial pituitary MRIs have shown progressive spontaneous reduction in size of the pituitary lesion from the original scan in December 2021 of 17mm x 11mm x 12mm to 14mm x 6mm x 8mm in May 2022, and 11mm x 3mm x 5mm in January 2023 with resolution of the suprasellar component, resolution of the high signal on T1 imaging and reduction in the infundibular deviation.

Images were reviewed in local radiology meeting and felt to represent probable resolution of haemorrhage into a cystic pituitary adenoma. This has been accompanied by spontaneous restoration of regular menses and normalisation of anterior pituitary function (prolactin 368mU/l [100-550 mU/L]), early morning cortisol 432nmol/l [160-550 mmol/L], ACTH 6.4 [<30ng/L], TSH 1.6 [0.3-4.2 mU/L], free T4 11pmol/l [9-23 pmol/L], free T3 2.9pmol/l [2.4-6 pmol/L], GH 1.53 ug/L , IGF1 17.8 [11-46 nmol/L]).

She had originally reported excessive thirst but not polyuria on initial assessment in endocrine clinic, but on subsequent review she reported marked polydipsia, polyuria and nocturia, passing up to 11L of urine daily. Formal water deprivation test confirmed VI. On review of serial imaging and biochemistry in the regional pituitary MDT, the images were still felt to be most consistent with a cystic adenoma of the pituitary. There was an absence of the posterior pituitary bright spot. There were no imaging features suggestive of inflammation, furthermore the patient had never received steroids which could have treated an undiagnosed inflammatory lesion. In view of the spontaneous reduction in size of the lesion, malignancy was not suspected. She is currently being managed with intranasal desmopressin.

We plan to re-image in 6 months and reassess clinically for resolution of VI.

Questions for discussion:

1. Does the panel have any thoughts on further differential diagnosis or management strategy?

Beyond the pituitary gland

K Koysombat[1], B Jones[2], F Tona[2], Z Jaunmuktane[3], R Nair[4], M Seckl[5], E Hatfield[1], N Martin[1], K Meeran[1].
1 - Department of Endocrinology, Imperial College Healthcare NHS Trust, London.
2 - Department of Radiology, Imperial College Healthcare NHS Trust, London.
3 - Department of Histopathology, University College London Hospitals NHS Foundation Trust.
4 - Department of Neurosurgery, Imperial College Healthcare NHS Trust, London.
5 - Department of Medical Oncology, Imperial College Healthcare NHS Trust, London.

Abstract
A 29-year-old man presented with acute vision loss affecting his left eye. MRI brain demonstrated a suprasellar cystic, solid lesion continuous with the left prechiasmatic optic nerve, chiasm and hypothalamic region separate from the pituitary gland. His pituitary profile was consistent with panhypopituitarism.

Remarkably he did not report symptoms suggestive of hypocortisolism or hypothyroidism. However he did report symptoms of hypogonadism including low libido, lack of morning erections, paucity of facial hair, and difficulty gaining muscle mass. He had a background of sickle cell trait. There was no relevant family history.

On examination he was tall with reduced muscle mass. He appeared pre-pubescent with no visible terminal hair on his face, torso and extremities. There was quadrantanopia on the left inferior nasal region.

Post clinic 9am hormone profile confirmed panhypopituitarism and hyperprolactinaemia likely secondary to stalk effect.

TSH 0.84 mU/L (0.30-4.20), FT4 8.0 pmol/L (9.0-23.0)
ACTH 25.6 ng/L, Cortisol 46 nmol/L
Testosterone <0.5 nmol/L (10.0-30.0), LH <0.1 IU/L (2-12), FSH 0.1 IU/L (1.7-8.0)
GH 0.54 ug/L, IGF-1 6.3 nmol/L (10.5-47.0)
Prolactin 1532 mU/L (60-300)

Consistent with chronic hypogonadism, he had pre-pubertal testes measuring 0.6ml (right) and 0.8ml (left) on testicular ultrasound. He commenced levothyroxine and prednisolone replacement.

A left frontotemporal craniotomy was performed to facilitate open biopsy of the hypothalamic tumour. Intraoperatively, he became polyuric, hypernatraemic and paired serum and urine osmolality were consistent with Arginine Vasopressin Deficiency (AVP-D or cranial diabetes insipidus) which necessitated DDAVP initiation.

Histology was in keeping with hypothalamic germ cell tumour with no metastatic disease on staging CT. Fertility preservation was unsuccessful with no sperm present in the ejaculate and a further attempt with sildenafil was ruled out, due to the low chances of success, given the low testicular volume. Chemotherapy was commenced immediately to mitigate the risk of further visual impairment. Each chemotherapy cycle consisted of 6L of fluid which made management of AVP-D challenging, requiring daily DDAVP dose adjustment. Routes of DDAVP administration also had to be adapted frequently, alternating between oral and subcutaneous to accommodate the patient's variable oral intake.

The patient completed 8 cycles of chemotherapy and adjuvant radiotherapy in May 2023 and is under active surveillance by oncology. He remains on replacement prednisolone, levothyroxine and DDAVP.

Questions for discussion:

1. What are the fertility options in this case?
2. Management of DDAVP doses with variable oral intake and large volume chemotherapy including different routes of DDAVP administration to facilitate safe care of patients under different clinical situations.
3. Re-evaluation of his hypothalamic-pituitary-function after completion of treatment to determine the need for long-term hormone replacement including puberty induction.

The difficulties in managing AVP deficiency following pituitary apoplexy

K Benedict, C Russell, H Darbon, F Tasnim, AKuganesan, JL Daurat, S Zac-Varghese.
East and North Hertfordshire NHS Trust.

Abstract
A previously well 79-year-old man was referred to the endocrine and neurosurgical teams, following pituitary apoplexy. He was admitted to hospital following an insidious, sudden onset retro-orbital headache, visual impairment, right-sided weakness and reduced GCS. He was initially investigated for meningitis, but his CT head and LP were normal, and he had no focal neurological signs. A repeat MRI scan showed a left thalamic infarct and haemorrhage into a pituitary macroadenoma. He was treated with high dose steroids and underwent urgent trans-sphenoidal surgery for pituitary apoplexy.

The patient was admitted to the endocrine ward for ongoing management. He was polyuric and polydipsic and anterior pituitary profile confirmed panhypopituitarism with hypothyroidism and hypogonadism. Ophthalmology review found bilateral central visual loss and poor visual acuity. He was diagnosed cranial AVP deficiency and managed with hydrocortisone, levothyroxine and domperidone. His sodium levels, fluid balance and weights were monitored rigorously. His sodium stabilised and he did not require DDAVP, and was encouraged to drink to thirst, with regular checking of urine output and sodium as an outpatient.

Pituitary apoplexy is a rare emergency characterised by sudden onset headache, often occurring from a clinically non-functional macroadenoma. There is a wide list of differentials to a ‘headache’ presentation, leading to delays in diagnosing pituitary apoplexy. This case highlighted the importance of MDT involvement with good ward-based care and monitoring for patients with panhypopituitarism. It also highlighted the importance detailed discussions of benefits and risks of management within the pituitary MDT and with the patient and their family.

Questions for discussion:
How do you best manage patients requiring AVP, but who are exquisitely sensitive to dDAVP?

Delayed diagnosis of pituitary adenoma in a patient with hypereosinophilic syndrome and a new diagnosis of myasthenia gravis

B Mahamud, A Mohamed, R Suthar, M Dram, G Mlawa.
Barking, Havering and Redbridge University Hospitals NHS Trust.

Introduction
Long-term administration of exogenous steroids is associated with adrenal suppression due to hypothalamic-pituitary-adrenal (HPA) axis suppression. The excessive use of steroid makes it a clinical challenge in the diagnoses of pituitary conditions.

Here we present a 54-year-old man who was admitted with left-sided painless eye ptosis. He denied headaches. His left-sided eye ptosis was worse in the afternoon compared to the morning time. His ECG showed bradycardia with 2:1 block.

He was reviewed by the Neurology team and diagnosed as likely ocular myasthenia by an ice -test. He had a CT head which revealed a bulky pituitary followed by an MRI which showed a pituitary macroadenoma measuring 1.9 cm but no optic chiasma compression.

Of note his blood test revealed hypopituitarism evidenced by secondary hypothyroidism FT4 8.9, FT3 3.4 and TSH 2.87. Moreover, he also had secondary hypogonadism with a testosterone level of 7.9, and inappropriate normal LH 1.8 and FSH 8.1.

His past medical history includes hypertension, hypereosinophilic syndrome (HES) and gastritis. He has been on long-term steroids (prednisolone) for the HES.

He was started on levothyroxine and pyridostigmine, and he had transsphenoidal surgery. He had PPM fitted for the complete heart block/bradycardia. He is monitored with yearly MRI and he had post transsphenoidal surgery in 2016.

Discussion:
The case presented here highlights the importance of a thorough physical exam and history, even in this era of digital medicine to avoid life-threatening delay in diagnosis of hypopituitarism due to underlying pituitary macroadenoma which is masked by the patient being on long-term exogenous steroids.

Questions for discussion:
Do you think aggressive management of hypereosinphillic syndrome contributed to delay in diagnosis?

IgG4 Hypophysitis and Thyroid Abnormalities.

S El Abd, N Butt.
Queen Alexandra Hospital, Portsmouth Hospitals NHS Trust.

Abstract
Immunoglobulin G4-related disease (IgG4-RD) is usually a rare immune-mediated inflammatory condition. Clinical manifestation of the disease is highly variable. IgG4-associated (Plasmacytic) hypophysitis is often associated with infiltration of other organs i.e. autoimmune pancreatitis, sclerosing cholangitis or retroperitoneal fibrosis It was first reported in 2004. . Isolated IgG4 hypophysitis is a very rare entity. The hallmarks of IgG4-related disease (IgG4-RD) are dense lymphoplasmacytic infiltrations with an abundance of IgG4-producing plasma cells, in the affected tissue, usually accompanied by some degree of fibrosis. Usually, it is associated with hypopituitarism and elevated serum IgG4 levels. However, a minority of patients have normal IgG4 levels.

Riedel's thyroiditis is another IgG4-related disease of the thyroid gland. It is a rare form of thyroiditis that presents as a hard goitre. However, it can occur in association with Hashimoto's thyroiditis.

IgG4, the least abundant of the four IgG antibodies, was reported to be associated with autoimmune and allergic diseases i.e. TPO in Hashimoto’s thyroiditis.

Our case is a 60-year-old female who presented with a headache and underwent MRI/MRV Head which found a bulky pituitary. The Pituitary MRI reported a 12 mm macroadenoma. The pituitary gland extends superiorly out of the sella and contacts the optic chiasm without associated compression or deviation.

The Pituitary hormones showed mildly high prolactin of 889 mIU/L, low Cortisol of 168 nmol/L, TSH of 0.79 mIU/L and FT4 of 7.3 pmol/L. Therefore, she was started on Hydrocortisone and Levothyroxine awaiting the Short Synacthen Test which showed a failed response to stimulation.

Two months after the initial presentation, she contacted the Endocrine Centre complaining of left eye changes. An urgent MRI was requested and showed a rapid progressive enlargement of the pituitary macroadenoma and haemorrhagic cystic degeneration with compression of the stretched optic chiasm superiorly. Therefore, she underwent TSS. The histology from the pituitary adenoma confirmed the diagnosis of IgG4-related hypophysitis. The Joint Pituitary MDT recommended having IgG4, CT- CAP, follow-up MRI and referral for the renal and rheumatology teams.

The IgG-4 level was checked and it was normal. Her renal function was completely normal and she has an unremarkable pancreas and no lymph nodes on the CT CAP. She was referred to the renal and rheumatology teams, however, she was discharged as there was no systemic involvement.

Ten months later, she developed hyperthyroidism and levothyroxine was stopped. The hyperthyroidism persisted after 6 months (TSH <0.01 mIU/L, T4 39.7 pmol/L, T3 15.5 pmol/L) and she was started on Carbimazole. The TRAB 1.6 U/L (0-0.9)and TPO 152 IU/ml.

After five months of starting Carbimazole, she developed profound hypothyroidism with TSH of 0.01 mIU/L and FT4 of 3.2 pmol/L. Therefore, Carbimazole was stopped. The most recent thyroid function was euthyroid off medications.

Questions for discussion:

1. Does IgG4 Hypophysitis need to be managed differently? How often should we do the Pituitary MRI?
2. Is there a need for systemic surveillance?
3. Could the hyperthyroid in this case be part of an IgG4-related disease or just an autoimmune thyroiditis?
4. Does this patient need a thyroid biopsy to rule out Riedel's? Would that change the management?

Aseptic meningitis due to craniopharyngioma.

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Abstract
56 year old man initially presented with recurrent headache and was diagnosed with an 18x13.5 mm pituitary lesion in August 2022. He had a normal pituitary profile except a slightly raised prolactin of 555 ug/L (73 – 407) and no visual field defect. After a few months he began to develop postural dizziness and, during an episode of food poisoning while travelling abroad, he was admitted to hospital with a sodium of 110 mmol/L (133 – 146). Upon returning to the UK, he continued to appear unwell and underwent further pituitary investigations which now showed cortisol 189 nmol/L (102 – 535), TSH 0.6 mIU/L (0.35 - 4.94), T4 8.7 pmol/L (9 - 19.1), FSH 2 IU/L (1 – 12), LH 1 IU/L (0.6 - 12.1), unrecordable testosterone. CT showed the pituitary adenoma extending up to the optic chiasm. Hydrocortisone, Levothyroxine and later Testosterone replacement was started. Visual fields were normal at this point.

Four months later, 3 weeks after returning from Mexico, he was admitted with fever, headache, photophobia and neck stiffness. He appeared unwell with a sepsis-like presentation, although inflammatory markers remained normal. CSF analysis found White Cell Count of $130x10^6$/L, 48% lymphocytes but no organisms were seen and culture was negative. Nevertheless, his condition improved with IV ceftriaxone and IV steroids. Multiple further investigations were arranged, including autoimmune screen, viral and tropical disease screen but did not show any abnormality. Repeat review of visual fields showed early bitemporal hemianopia. He also noted thirst and polyuria and further investigations confirmed diabetes insipidus which was treated with desmopressin.

MRI Pituitary was repeated and showed the mass enlarging to 20.8x17.3 mm with increasing peripheral enhancement within the right side of the pituitary, progression of atypical enhancement associated with the infundibulum and extending into the hypothalamus, and an absent posterior pituitary bright spot.

Possible diagnoses based on imaging and investigations were pituitary apoplexy or abscess but the features were not typical for either. After discussions with the Pituitary MDT, he was transferred to Charing Cross Hospital for transsphenoidal resection of the pituitary lesion. Histology of the resected tissue showed squamous papillary craniopharyngioma.

Questions for discussion:

1. Should development of aseptic meningitis increase suspicion of underlying craniopharyngioma?
2. Is further treatment with radiotherapy required for this patient?

A very rare case of TSH-secreting pituitary adenoma.

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West Middlesex University Hospital Chelsea and Westminster Hospital NHS Foundation Trust.

Abstract
A 38-year-old lady was referred to the endocrinology clinic with a normal TSH (4.5mIU/L), raised free T4 (22.5pmol/L) & raised free T3 (8.3 pmol/L).

On examination, she was clinically euthyroid with no discernible goitre or visual field defect.

Her past medical history included obesity, with impaired glucose tolerance and gestational diabetes in both pregnancies. And having completed her family, her menstrual cycle remained regular in the absence of galactorrhoea. Of interest, in childhood, her sister was diagnosed with thyroid dysfunction in association with a low BMI however, this has since resolved spontaneously.

Repeat thyroid function testing confirmed an elevated TSH (5 mU/L), raised free T4 (19 mU/L) and free T3 (7.4 mU/L) with concordant results on paired (Siemens and Roache) assays, consistent with secondary hyperthyroidism. Genetic testing for a TR-β gene mutation was unremarkable, with pituitary MR imaging confirming a 10mm pituitary macroadenoma, with no mass effect on the optic pathways and no lateral extension.

Her TRH test demonstrated a flat response (TSH of 4.2 mU/L, 4.2 mU/L and 4.1 mU/L at baseline, 20 minutes and 60 minutes, respectively), with all other pituitary axis preserved.

The above findings are keeping with a TSH-secreting pituitary adenoma, and following discussion at the Imperial pituitary MDT, she will be invited to attend a neurosurgical appointment with a view to elective transsphenoidal surgery and interim symptom control managed with monthly Octreotide.

Question for discussion:
Would you conduct the diagnostic evaluation differently in this interesting case?

A rare macroadenoma mimic.

E Hyams, F Wernig.
Imperial College Healthcare NHS Trust, London.

Abstract

A 31 year old woman 36 weeks pregnant presented with a six week history of persistent new headache, visual disturbance and facial numbness. PMH of migraine but otherwise well. The patient was clinically stable with no focal neurology.

MRI head reported an intrasellar lesion contacting and elevating the optic chiasm with no overt compression. Initial blood tests were normal with TSH 0.87 mU/L, T4 9.2 pmol/L, 8 am cortisol 393 nmol/L and prolactin 5148 mU/L.

The impression was this was a non-functioning pituitary macro adenoma with optic chiasm elevation, the patient was discussed with endocrinology and discharged with a plan for MDT discussion and outpatient follow up.

Nine days later, three days post-partum, the patient presented with headache and altered vision. Dedicated Pituitary MRI reported slightly larger suprasellar component of the presumed pituitary adenoma with maximal height 14mm. Visual field assessment identified loss of peripheral vision in the left eye.

Repeat biochemistry demonstrated evidence of new cortisol and thyroid hormone abnormality, Free T4 8.6 pmol/L and afternoon cortisol 118 nmol/L. TSH 0.41 mU/L and ACTH was 33.4 ng/L. Remaining 9 am pituitary profile - LH 1.4 U/L, FSH 4.1 U/L, Oestradiol < 100 pmol/L, Prolactin 807 mU/L, GH 1.29 and IGF -1 35.3 ug/L. AIP testing was conducted as the patient's father had a pituitary mass requiring surgery and radio therapy, the results of which were negative.

A working diagnosis of non-functioning pituitary macroadenoma with secondary hypothyroidism and hypoadrenalism was made. The patient was commenced on Prednisolone 3mg and Levothyroxine 50mcg was started one week later.

The patient has remained under regular follow up over five years. She remains ACTH deficient, multiple short synacthen tests have demonstrated an inadequate response. Thyroid function has spontaneously resolved, the patient stopped taking replacement 2 and a half years after presentation and it has remained normal. The rest of the pituitary profile is normal.

Repeat MRI has shown continuous reduction of the pituitary lesion, the pituitary now appears normal with no evidence of any underlying macro adenoma or infarction. The patient's visual field deficit has improved.

The pattern of hormone deficiency, temporal relationship with pregnancy and resolution of lesion on MRI has led to a new proposed diagnosis of lymphocytic hypophysitis, this is clinical as there is no histology available.

Lymphocytic hypophysitis is the most common cause of primary hypophysitis in women with more than half of cases presenting in late pregnancy or early postpartum. Clues to the diagnosis include a different pattern of pituitary function deficit to that seen in pituitary adenoma and more homogenous change on the pituitary MRI.

Questions for discussion:

1. Is this lymphocytic hypophysitis?
2. Is there any role for steroids in the acute phase?
3. What would we advise about future pregnancies?