A Rare Case of Meningothelial Meningioma

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BACKGROUND

Biopsy done showed meningothelial meningioma WHO grade 1. Tumor was removed based on simsons grading of excision. Patient now symptomatically better and on follow up.

HISTORY

A 70 year old male farmer by occupation belong to low socioeconomic class presented with

CHIEF COMPLAINTS

• Weakness of left upper limb and left lower limb since 1 day

• Increased frequency of micturition since 2 weeks

HOPI

• Apparently normal 1 day back

• Developed weakness of left upper limb and lower limb sudden in onset not progressive

• Increased frequency of micturition in the night time since 2 weeks

• No h/o of trauma / fall / vomiting / loss of consciousness

• No h/o fever

• No h/o bowel and bladder involvement

• No h/o loss of sensation

PAST H/O: NO T2DM: NO HTN: TUBERCULOSIS, asthma

Family h/o: No similar h/o in the family

Personal h/o: bowel and bladder habits are normal, sleep adequate, not a known alcoholic / smoker

EXAMINATION

• Moderately built and nourished

• Conscious and cooperative, afebrile

• Vitals BP : 160/90 mmHg PR: 82/min

• CBG: 580 mg/dl spo2 98% @ RA

• No neuro cutaneous markers

• No pallor/ icterus/ cyanosis /clubbing/ lymphadenopathy/ edema

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CNS EXAMINATION
- **HMF:** normal
- **SPEECH:** normal
- **CRANIAL NERVE EXAMINATION:** WNL
  - III, IV, VI
  - Extra-ocular movements: Normal
  - Pupil - Size: Normal
  - Direct Light Reflex: Present
  - Consensual Light Reflex: Present
  - Accommodation Reflex: Present
  - NO Ptosis, Nystagmus, Horner’s syndrome

MOTOR EXAMINATION

<table>
<thead>
<tr>
<th></th>
<th>RIGHT</th>
<th>LEFT</th>
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<tbody>
<tr>
<td><strong>Tone</strong></td>
<td>Normal</td>
<td>Normal</td>
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<tr>
<td>Upper limb</td>
<td>Normal</td>
<td>Normal</td>
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<tr>
<td>Lower limb</td>
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<tr>
<td><strong>Bulk</strong></td>
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<tr>
<td>Upper limb</td>
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<tr>
<td>Lower limb</td>
<td>Normal</td>
<td>Normal</td>
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<tr>
<td><strong>Power</strong></td>
<td>5/5</td>
<td>3/5</td>
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<tr>
<td>Upper limb</td>
<td>5/5</td>
<td>3/5</td>
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<tr>
<td>Lower limb</td>
<td>5/5</td>
<td>3/5</td>
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<tr>
<td><strong>Reflexes</strong></td>
<td>normal</td>
<td>Exaggerated</td>
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<tr>
<td>Biceps</td>
<td>normal</td>
<td>Exaggerated</td>
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<tr>
<td>Triceps</td>
<td>Normal</td>
<td>Exaggerated</td>
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<tr>
<td>Knee jerk</td>
<td>Normal</td>
<td>Exaggerated</td>
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<tr>
<td>Ankle jerk</td>
<td>Normal</td>
<td>Exaggerated</td>
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<tr>
<td><strong>Plantar</strong></td>
<td>Flexor</td>
<td>Extensor</td>
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OTHER SYSTEMIC EXAMINATION

Cardiovascular system:
- **JVP:**
- Apex normally placed,
- No Palpable P2,
- Heart sounds – normal,
- No thrills/murmurs

Respiratory system:
- Chest symmetrical,
- No paradoxical movements,
- Normal vesicular breath sounds heard,
- No abnormal/added sound.

Abdomen:
- Abdomen is soft,
- No organomegaly,
- No ascites.

INVESTIGATIONS

HB: 12.2; RBC: 4.3 mill/cum; PCV: 38%; MCV: 88 pg; MCHC: 31 g/gl; TLC: 6.600/cmm; PLT: 1.7 lac/cmm: N 62; L 31; E 01; M 06; FBS: 131; PPBS: 344.

Lipid Profile

TOT cholesterol: 181 mg/dl; triglycerides: 149 mg/dl; HDL cholesterol: 37 mg/dl; LDL cholesterol: 114 mg/dl; VLDL cholesterol: 30 mg/dl.
RFT: Urea: 31; Creatine: 1.0
LFT: Total protein: 6.3 g/dl; albumin: 3.7 mg/dl; bilirubin total: 0.9 mg/dl; bilirubin direct: 0.2 mg/dl; SGOT: 36 u/l; SGPT: 22 u/l; ALP: 232 u/l.
Electrolytes: Na: 137 meq/l; k: 3.5 meq/l; Cl: 100 meq/l.
Urine routine: albumin: nil; sugar: ++; ketones: negative; epi cells: 3-5; pus cells: 1-3

CT REPORT
- Possible lateral sellar mass suggested MRI brain for further evaluation

T1 W Image
Diagnosis

Left sided hemiparesis (sella turcica mass occluding anterior choroidal artery)/ newly diagnosed T2DM / newly diagnosed HTN.

Anatomy

The cavernous sinuses are located within the middle cranial fossa, on either side of the sella turcica of the sphenoid bone (which contains the pituitary gland). They are enclosed by the endosteal and meningeal layers of the dura mater.

The borders of the cavernous sinus are as follows:

- Anterior – superior orbital fissure.
- Posterior – petrous part of the temporal bone.
- Medial – body of the sphenoid bone.
- Lateral – meningeal layer of the dura mater running from the roof to the floor of the middle cranial fossa
- Roof – meningeal layer of the dura mater that attaches to the anterior and middle clinoid processes of the sphenoid bone.
- Floor – endosteal layer of dura mater that overlies the base of the greater wing of the sphenoid bone

Anatomy of cavernous sinus
7/8

**Sellar masses clinical manifestations depend on location and direction of its extension**

<table>
<thead>
<tr>
<th>Impacted Structure</th>
<th>Clinical impact</th>
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<tbody>
<tr>
<td><strong>Pitutary</strong></td>
<td>Hypogonadism</td>
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<td>Hypothyroidism</td>
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<td>Growth factor and adult hyposomatotropism</td>
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<td>Hypoadrenalism</td>
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<td><strong>Optic Chiasma</strong></td>
<td>Loss of red perception</td>
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<td></td>
<td>Bitemporal hemianopia</td>
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<td>Superior or bitemporal field defect</td>
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<td>Blindness</td>
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<td>Scotoma</td>
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<td><strong>Hypothalamus</strong></td>
<td>Temperature dysregulation</td>
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<td>Appetite and thirst disorders</td>
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<td>Obesity</td>
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<td>Diabetes insipidus</td>
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<td>Sleep disorders</td>
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<td>Behavioural dysfunction</td>
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<td>Autonomic dysfunction</td>
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<tr>
<td><strong>Cavernous sinus</strong></td>
<td>Ophthalmoplegia with or without ptosis or diplopia</td>
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<td></td>
<td>Facial numbness</td>
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<tr>
<td><strong>Frontal lobe</strong></td>
<td>Personality disorder</td>
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<td>Anosmia</td>
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<td><strong>Brain</strong></td>
<td>Headache</td>
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<td></td>
<td>Hydrocephalus</td>
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<td></td>
<td>Psychosis</td>
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<td></td>
<td>Dementia</td>
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<td>Laughing seizures</td>
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</tbody>
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**Hypothalamic Lesions**
- Anterior and preoptic hypothalamic region: Paradoxical vasoconstriction, tachycardia, hyperthermia,
- Posterior hypothalamic region: Central disorder of thermoregulation
- Ventromedial hypothalamic nuclei: Hyperphagia obesity - in craniopharyngioma-hypothalamic trauma, inflammatory
- Preoptic nuclei: Central osmoreceptors – polydypsia and hypodipsia
- Central hypothalamus: Sympathetic neurons – increase serum catecholamines and cortisol levels

**Craniopharyngiomas**
- Benign suprasellar cystic masses
- Derived from Rathke's pouch arise near pituitary stalk
- >50% patients present before age 20 with
  - Signs of increased ICP (headaches, vomiting, papilledema + hydrocephalus)
  - Visual field abnormalities, personality changes, cognitive deterioration
- Hypopituitarism in 90% cases
- >50% pts growth retardation
- Treatment: transcranial/transsphenoidal surgical resection f/b postop radiation of residual tumor

**Rathkes Cyst**
- Developmental failure of Rathke's pouch obliteration
- Incidentally diagnosed usually don't grow
- 1/3 present with compressive symptoms
- Diagnosis: visualizing cyst wall on MRI

**Arachnoid cyst**
- Rare isointense with CSF on MRI

**Sella chordomas**
- Bony clival erosions, locally invasiveness,
- Normal pituitary tissue may be visible on MRI distinguishing from pituitary adenoma
- Mucinous material by FNAC

**MENINGIOMAS**
- Difficult from non-functional pituitary adenoma
- Typically enhance on MRI and show calcification/bony erosions
- Cause compressive symptoms

**HISTIOCYTOSIS X**
- Variety of syndromes as with Eosinophilic granulomas
- Diabetes insipidus, optic atrophy, punched out lytic bone lesions (hand Schiller-Christian disease)
- Granulomatous lesions visible on MRI
- Characteristic axillary skin rash

**Pituitary Metastasis**
- Blood borne metastatic deposits found in posterior pituitary
- So diabetes insipidus presenting feature of lung, GIT, breast, other pituitary metastasis 50% pituitary meets are from breast cancer
- MRI difficult from aggressive pituitary adenoma, histological examination confirm diagnosis

**Hypothalamic Gliomas and Optic Gliomas**
- Childhood present with visual loss
- Adult more aggressive
- 1/3rd associated with neurofibromatosis

**Hypothalamic Hamartomas and Gangliocytomas**
- Arise from astrocytes, oligodendrocytes and neurons
- Over express hypothalamic neuropeptides GHRH, GnRH, CRH
- c/f precocious puberty, psychomotor delay, laughing associated seizures
- Preoperative MRI diagnosis may not possible as it contiguous with pituitary
- Associated with craniofacial abnormality, imperforate anus, cardiac renal and lung disorders (Pallister-Hall syndrome)

**Brain Germ Cell Tumors**
- Dysgerminomas – DI & visual loss
- Germinomas, embryonic carcinomas, teratomas and chorionic carcinomas – parasellar region produce HCG – precocious puberty, DI, visual field defects, thirst disorders.

**Pituitary Adenoma**
- Benign neoplasms arise from one to five anterior pituitary cell types
MENINGIOMA

• Most common
• Age 50-70
• Female
• Arise from arachnoid cap cells of dura
• well-circumscribed benign (WHO grade I)
• atyp
• ical, clear cell, and chordoid (WHO grade II)
• anaplastic, rhabdoid, and papillary (WHO grade III)
• Meningiomas invading the cavernous sinus proper can encase the cavernous segment of the ICA, causing its narrowing, or can even invade the ICA wall.

CONFLICT OF INTEREST DISCLOSURE
The authors declare that there is no conflict of interests to disclose.

BIBLIOGRAPHY