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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/ cynosis /clubbing/ lymphadenopathy/ edema

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, Horners syndrome

MOTOR EXAMINATION

		RIGHT	LEFT
Tone	Upper limb	Normal	Normal
	Lower limb	Normal	Normal
Bulk	Upper limb	Normal	Normal
	Lower limb	Normal	Normal
Power	Upper limb	5/5	3/5
	Lower limb	5/5	3/5
Reflexes	Biceps	normal	Exaggerated
	Triceps	Normal	Exaggerated
	Knee jerk	Normal	Exaggerated
	Ankle jerk	Normal	Exaggerated
Plantar		Flexor	Extensor

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:

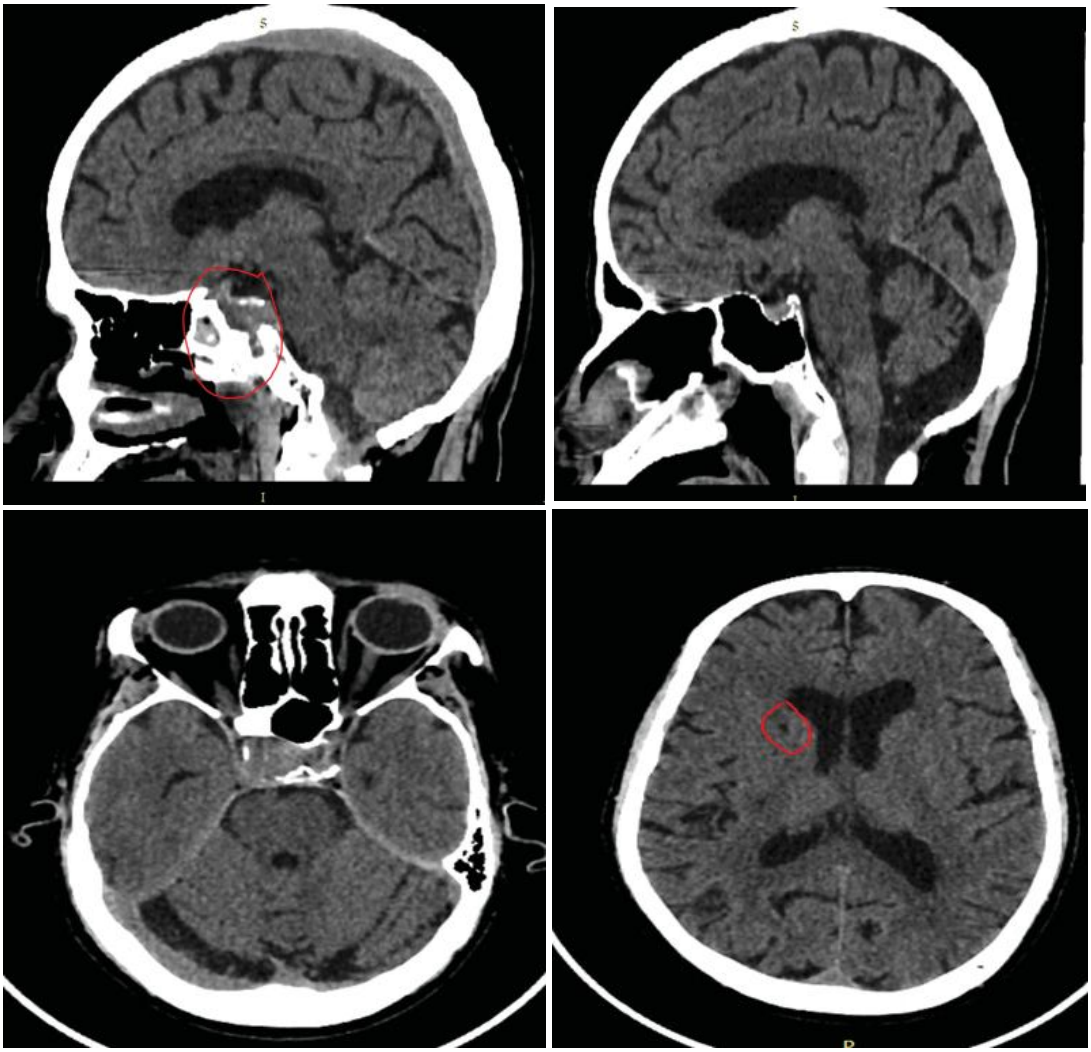
- Abdomen is soft,
- No organomegaly,
- No ascites.

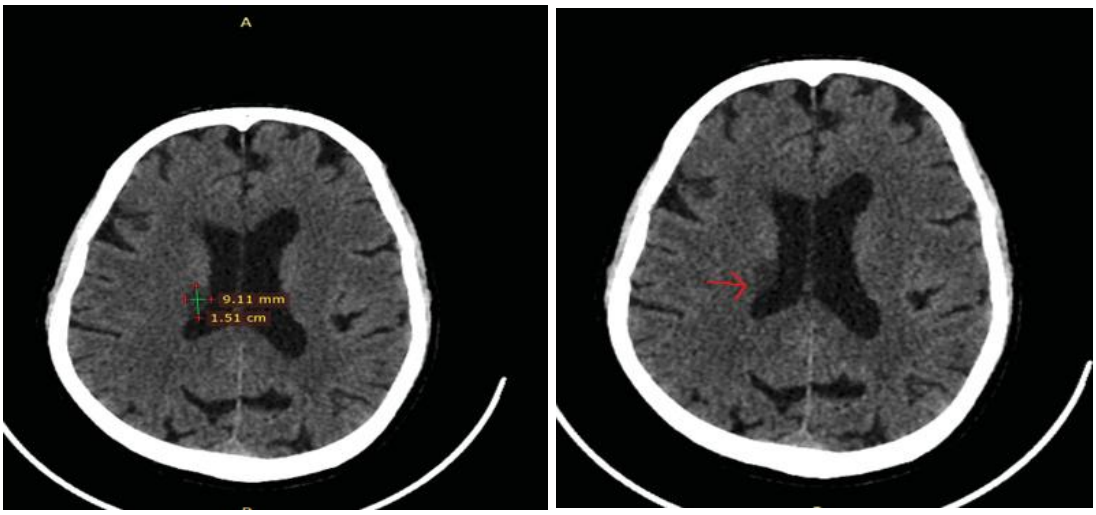
INVESTIGATIONS

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.

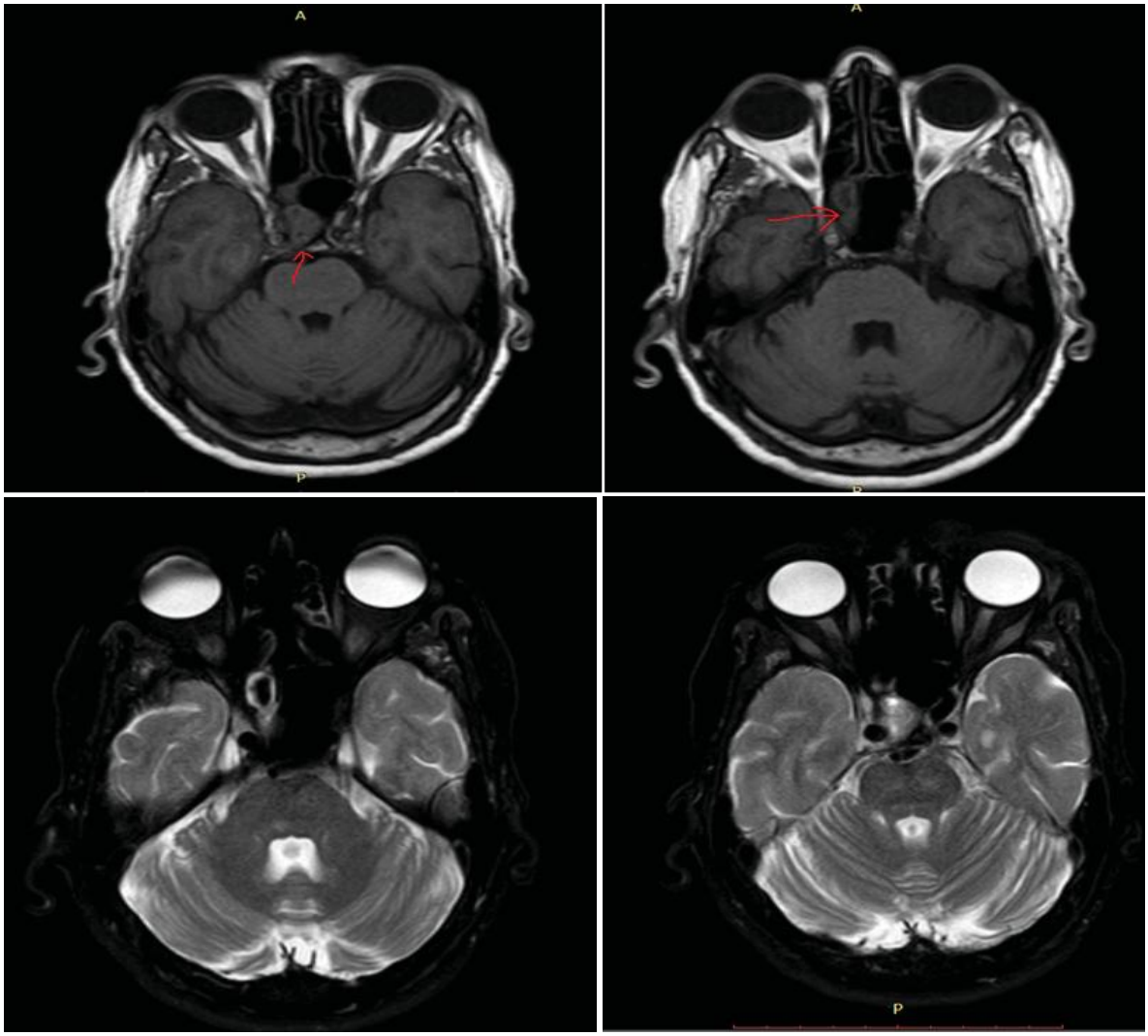
Electrolytes: Na: 137 meq/l; k: 3.5 meq/l; Cl: 100 meq/l.

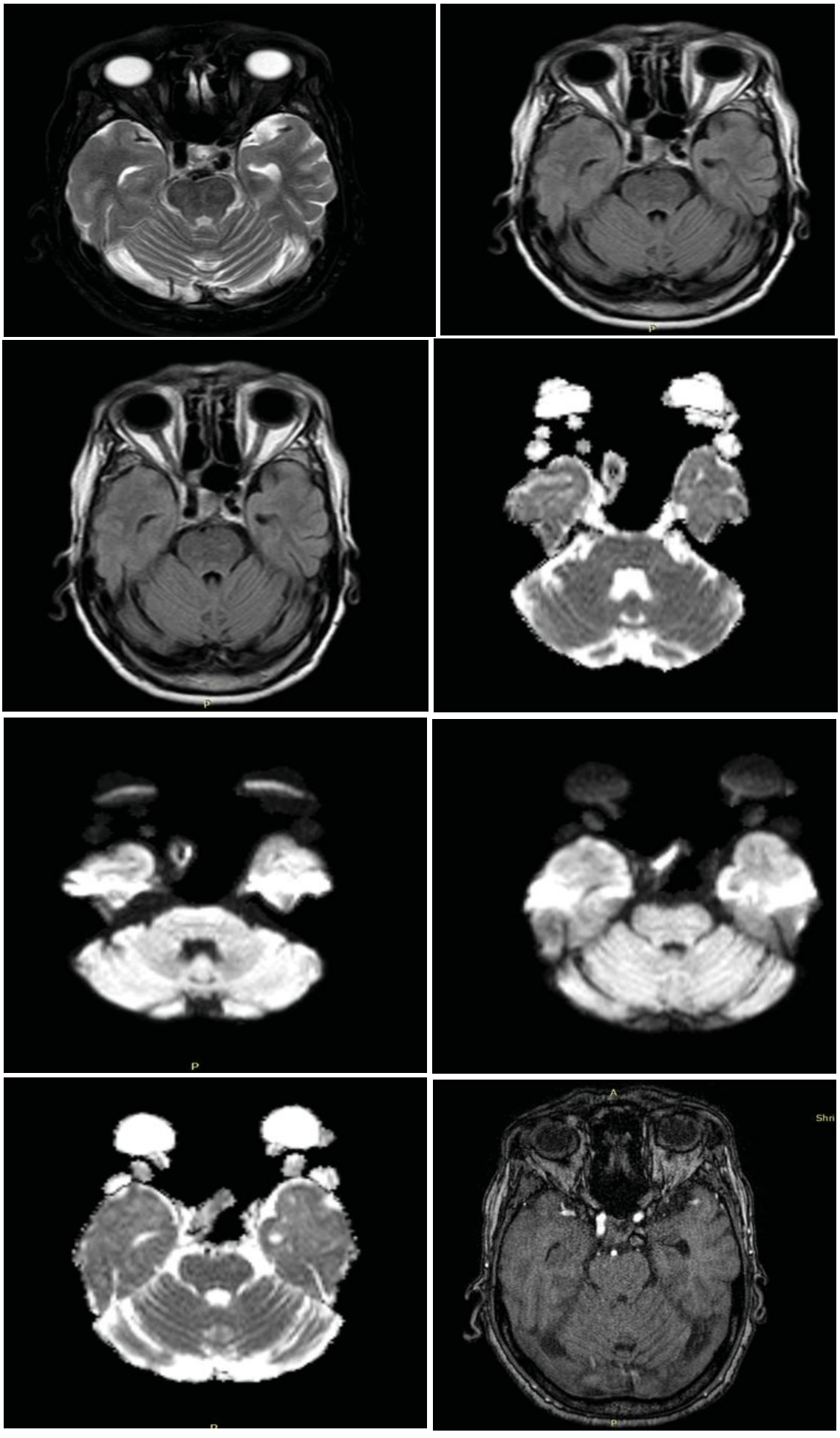
Urine routine: albumin: nil; sugar: ++; ketones: negative; epi cells: 3-5; pus cells: 1-3

CT REPORT

- Possible lateral sellar mass suggested MRI brain for further evaluation

T1 W Image

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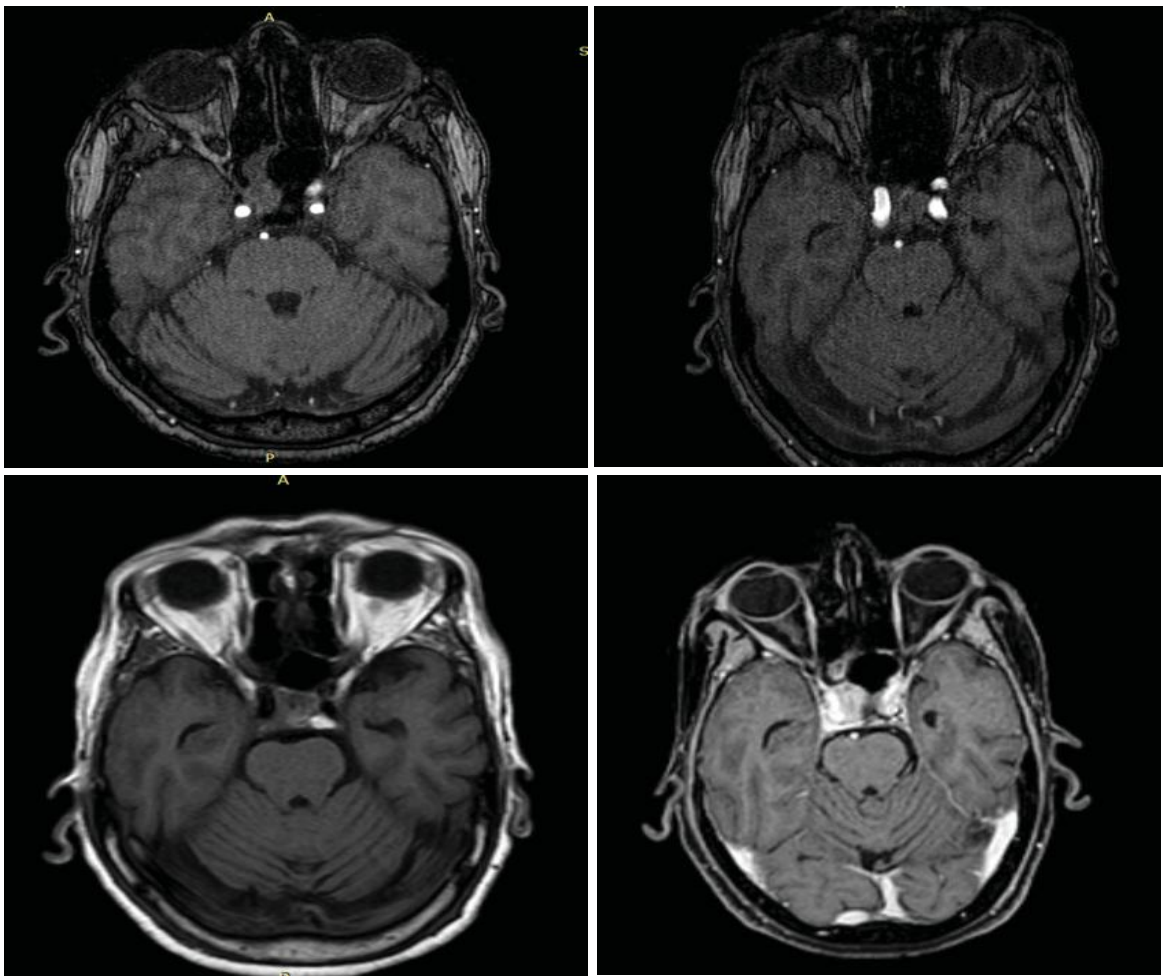


Diagnosis

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

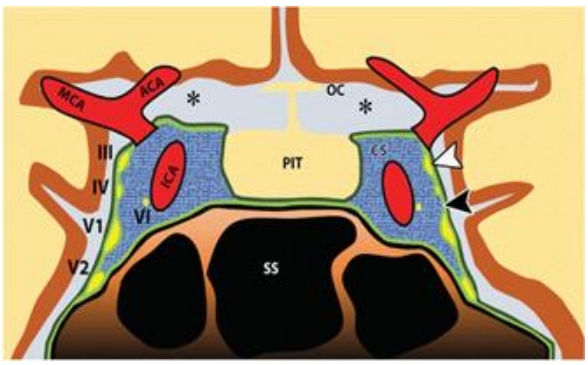
Anatomy

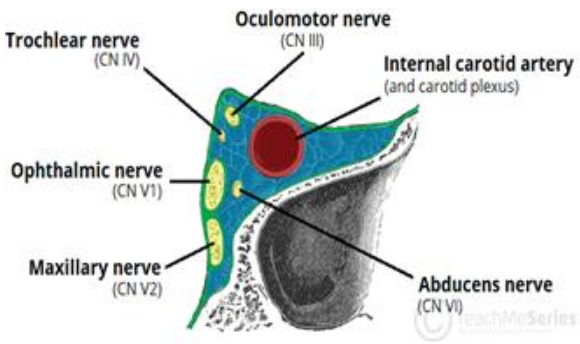
The cavernous sinuses are located within the middle cranial fossa, on either side of the sella turcica of the sphenoid bone (which contains the pituitary gland). They are enclosed by the endosteal and meningeal layers of the dura mater.

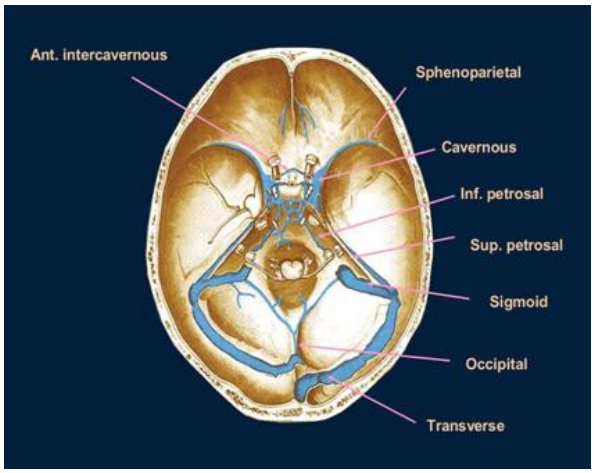
The borders of the cavernous sinus are as follows:

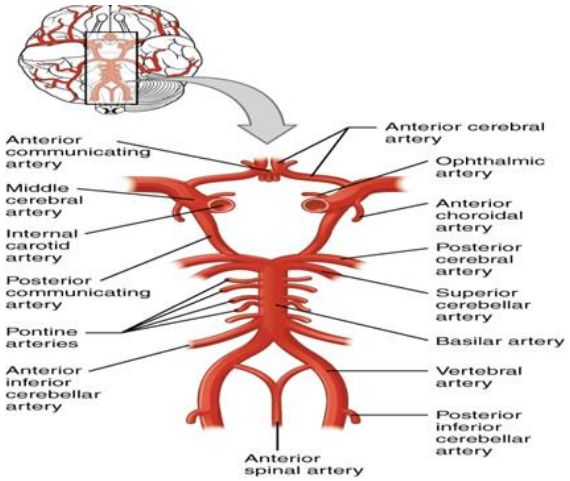
- Anterior – superior orbital fissure.
- Posterior – petrous part of the temporal bone.
- Medial – body of the sphenoid bone.
- Lateral – meningeal layer of the dura mater running from the roof to the floor of the middle cranial fossa
- Roof – meningeal layer of the dura mater that attaches to the anterior 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

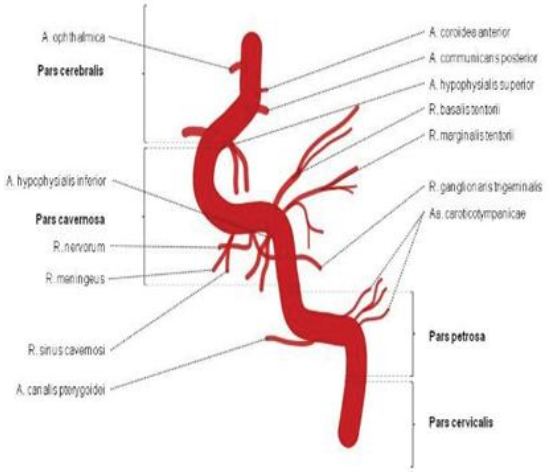
Anatomy of cavernous sinus

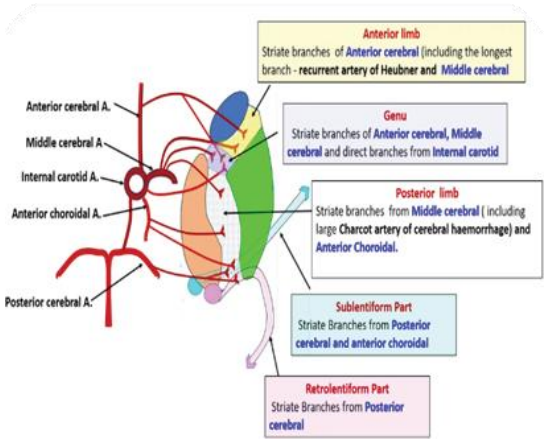


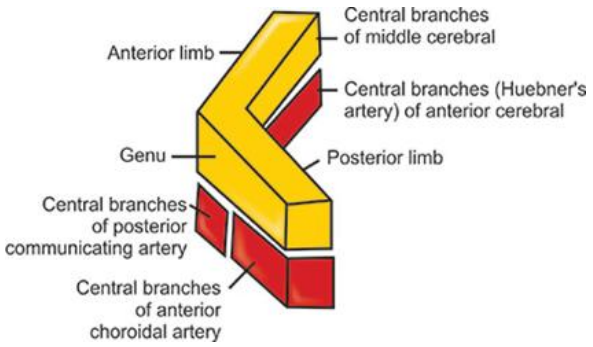


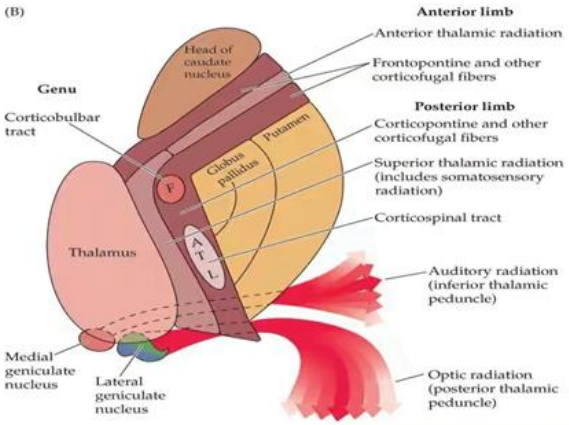

Ant. intercavernous
Sphenoparietal
Cavernous
Inf. petrosal
Sup. petrosal
Sigmoid
Occipital
Transverse

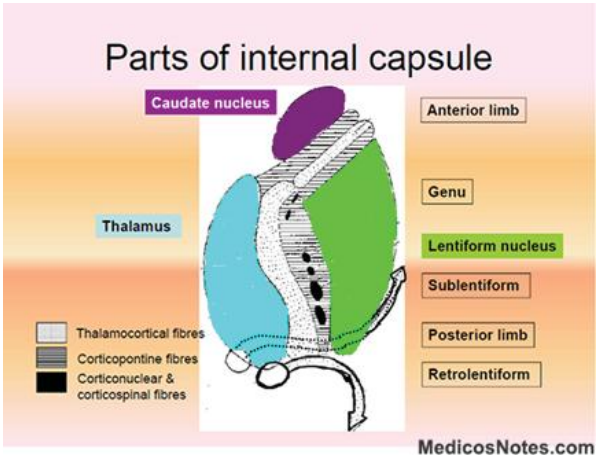

Anterior communicating artery
Middle cerebral artery
Internal carotid artery
Posterior communicating artery
Pontine arteries
Anterior inferior cerebellar artery
Anterior cerebral artery
Ophthalmic artery
Anterior choroidal artery
Posterior cerebral artery
Superior cerebellar artery
Basilar artery
Vertebral artery
Posterior inferior cerebellar artery
Anterior spinal artery


A. ophthalmica
Pars cerebralis
A. hypophysialis inferior
Pars cavernosa
R. nervorum
R. meningeus
R. sinus cavernosi
A. canalis pterygoidei
A. coroidea anterior
A. communicans posterior
A. hypophysialis superior
R. basalis tentorii
R. marginalis tentorii
R. ganglionaris trigeminalis
Aa. caroticotympanicae
Pars petrosa
Pars cervicalis


Anterior limb
Striate branches of Anterior cerebral (including the longest branch - recurrent artery of Heubner and Middle cerebral
Anterior cerebral A.
Middle cerebral A
Internal carotid A.
Anterior choroidal A.
Posterior cerebral A.
Genu
Striate branches of Anterior cerebral, Middle cerebral and direct branches from Internal carotid
Posterior limb
Striate branches from Middle cerebral (including large Charcot artery of cerebral haemorrhage) and Anterior Choroidal.
Sublentiform Part
Striate Branches from Posterior cerebral and anterior choroidal
Retrolentiform Part
Striate Branches from Posterior cerebral


Anterior limb
Central branches of middle cerebral
Central branches (Huebner's artery) of anterior cerebral
Genu
Posterior limb
Central branches of posterior communicating artery
Central branches of anterior choroidal artery


(B)
Anterior limb
Anterior thalamic radiation
Head of caudate nucleus
Frontopontine and other corticofugal fibers
Genu
Corticobulbar tract
Posterior limb
Corticopontine and other corticofugal fibers
Putamen
Globus Pallidus
Superior thalamic radiation (includes somatosensory radiation)
Thalamus
Corticospinal tract
Auditory radiation (inferior thalamic peduncle)
Medial geniculate nucleus
Lateral geniculate nucleus
Optic radiation (posterior thalamic peduncle)


Parts of internal capsule
Caudate nucleus
Thalamus
Anterior limb
Genu
Lentiform nucleus
Sublentiform
Posterior limb
Retrolentiform
Thalamocortical fibres
Corticopontine fibres
Corticonuclear & corticospinal fibres
MedicosNotes.com

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

Impacted Structure	Clinical impact
Pitutary	Hypogonadism
	Hypothyroidism
	Growth factor and adulthyposomatotropism
	Hypo adrenalism
Optic Chiasma	Loss of red perception
	Bitemporal hemianopia
	Superior or bitemporal field defect
	Blindness
	scotoma
Hypothalamus	Temperature dysregulation
	Appetite and thirst disorders
	Obesity
	Diabetes insipidus
	Sleep disorders
	Behavioural dysfunction
	Autonomic dysfunction
Cavernous sinus	Ophthalmoplegia with or without ptosis or diplopia
	Facial numbness
Frontal lobe	Personality disorder
	Anosmia
Brain	Headache
	Hydrocephalus
	Psychosis
	Dementia
	Laughing seizures

Hypothalamic Lesions

- Anterior and preoptic hypothalamic region: Paradoxical Vaoconstriction , tachycardia , hyperthermia,
- Posterior hypothalamic region: Central disorder of thermo regulation
- Ventromedial hypothalamic nuclei: Hyperphagia obesity -in craniopharyngioma-hypothalamic trauma, inflammatory
- Preoptic nuclei: Central osmoreceptors – polydypsia and hypodypsia
- Central hypothalamus: Sympathetic neurons –increase serum catecholamines and cortisol levels

Craniopharyngiomas

- Benign suprasellar cystic masses
- Derived from rathkes 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: trans cranial/transsphenoidal surgical resection f/b postop radiation of residual tumor

Rathkes Cyst

- Developmental failure of rathkes pouch obliteration
- Incidentally diagnosed usually don't grow
- 1/3 present with compressive symptoms
- Diagnosis: visualizing cystwall on mri

Arachnoid cyst

- Rare isointense with CSF on mri

Sella chordomas

- Bony clival erosions , locally invasiveness,
- Normal pitutary tissue may be visible on MRI distngushing from pitutary 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, exophthalmos, 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 chorio 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

Adenoma cell origin	Harmone product	Clinical syndrome
Lactotrope	PRL	Hypogonadism, galactorrhea
Gonadotrope	FSH, LH, Subunits	Silent or hypogonadism
Somatotrope	GH	acromegaly/gigantism
Corticotrope	ACTH/none	Cushing disease or silent
Mixed growth HARMONE and prolactin cell	GH, PRL	Acromegaly, hypogonadism, galactorrhea
Other Plurihormonal cell	Any	mixed
Acidophil stem cell	PRL, GH	Hypogonadism, galactorrhea, acromegaly
Mammosomatotrope	PRL, GH	Hypogonadism, galactorrhea, acromegaly
Thyrotrope	TSH	Thyrotoxicosis,
Null cell	None	Pituitary failure/ none
Oncocytoma	None	Pituitary failure/none

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.

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