

INTRACRANIAL TUMOURS

Intra Cranial Tumours:

Clinical Presentation:

- (a) Headache
- (b) Epilepsy
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- (c) Localising symptoms and signs
 - Dysphasia
 - Hemiplegia
 - Hemianopia
 - Anosmia
 - Focal Epilepsy
 - Cranial nerve Palsies
 - Ataxia, Nystagmus, Dysarthria
- (d) Endocrine disturbance (Pituitary Tumours)
- (e) Impairment of consciousness
 - Drowsiness
 - Confusion
 - Coma
- (f) Dementia- eg. Corpus Callosum Tumour
 - (causes profound dementia)
 - Hydrocephalus – less severe
 - Frontal Lobe tumour esp. Bilateral

CNS TUMOURS

BENIGN	MALIGNANT
<p>*Meningioma</p> <p>Schwannoma (Neurilemmoma)</p> <p>Neurofibroma</p> <p>Pituitary Adenoma -Secreting -Non-secreting</p> <p>Haemangioblastoma</p> <p>Craniopharyngioma (locally invasive)</p> <p>Dermoid & Epidermoid</p> <p>Benign Astrocytomas - Optic nerve glioma - Pilocytic astrocytoma</p> <p>Glomus Tumours - glomus jugulare - glomus vagale</p> <p>Central Neurocytoma</p>	<p>(a) <u>Primary CNS Tumours:</u></p> <p>- Gliomas:</p> <ul style="list-style-type: none"> • Astrocytoma (grade I – IV) • Glioblastoma multiforme (GBM) • Oligodendroglioma (I – IV) • Ependymoma <p>- Medulloblastoma – (PNET)</p> <p>- CNS Lymphoma</p> <p>(b) <u>Metastatic Tumours:</u> (=Secondary brain tumours)</p> <ul style="list-style-type: none"> • Lungs • Breast • GIT • Kidney • Prostate • Melanoma • Chorion Carcinoma • NPC: (local invasion of brain) <p>(c) <u>Others:</u></p> <p style="padding-left: 40px;">Chordoma</p> <p style="padding-left: 40px;">Chondrosarcoma</p> <p style="padding-left: 40px;">Chondroma</p>

INTRACRANIAL TUMOURS COMMONLY SEEN:

1. **Gliomas:** (the commonest CNS tumours)
 - * Glioblastoma Multiforme (GBM : commonest),
 - * Astrocytoma,
 - * Ependymoma,
 - * Oligodendroglioma
2. **Metastatic:** (Secondary brain tumours),
More than one lesions make dx easy.
Most common primary is Lung.
3. **Meningiomas:** (Mostly Benign)
4. **Pituitary Adenomas:** (Almost always benign)
5. **C-P Angle Tumours:**
Acoustic Schwanoma (commonest):
6. **Childhood Tumours:**
 - * Meduloblastoma,
 - * Ependymoma,
 - * Pilocytic Astrocytoma (Benign),
 - * Optic Nerve Glioma (Benign),
 - * Choroid Plexus Papilloma,
 - * Craniopharygioma (locally malignant)
7. **Adolescent age:**
 - * Pineal tumours (Germinomas, Teratomas)
 - * Chordoma, Chondroma, Chondrosarcoma.
 - * Pilocytic Astrocytoma,
 - * Craniopharngioma
8. **Less common Tumours:**
 - * Haemangioblastoma (Benign, but very vascular),
 - * Epidermoid & Dermoid.
 - * Glomus Jugulare (locally invasive or malignant)
 - * Colloid Cyst of 3rd ventricle.

MANAGEMENT OF INTRACRANIAL TUMOURS

INVESTIGATIONS

MEDICAL TREATMENT

SURGICAL TREATMENT

POSTOPERATIVE MANAGEMENT & REHABILITATION

RADIOTHERAPY AND / OR CHEMOTHERAPY

TREATMENT OF RECURRENCE

TERMINAL CARE / HOSPICE CARE

MANAGEMENT OF INTRACRANIAL TUMOURS:

Radiological Investigations :

1. X-ray Skull:

- * Evidence of raised intracranial pressure, especially in children.
- * Pineal calcification in children indicate Pineal tumour.
- * Abnormal calcifications, eg. meningioma, craniopharyngioma.
- * Enlarged pituitary fossa in pituitary tumours.
- * Enlarged IAM in acoustic tumours.
- * Osteolytic lesions of skull; eg. secondaries of skull.

2. CT Scan:

Both non-contrast and contrast enhanced scans should be obtained

- * Look for both normal and abnormal findings
- * Single or multiple tumours
- * Solid or cystic or mixed density lesions
- * Surrounding oedema
- * Midline shift and herniation
- * Compression of ventricles
- * Hydrocephalus or not
- * Contrast enhancement or not
- * Evidence of necrosis, cystic changes or haemorrhages

3. MRI, MRA, MRV, MR Spectroscopy, Flow Studies:

- * Complementary to / replacing CT scan .
- * Give more anatomical details in multiple planes.
(Axial, coronal and sagittal planes)
- * Very valuable for brain stem, Cranio-cervical junction and Pituitary tumours
- * Normal and abnormal blood vessels and venous sinuses can be visualized:
(MRA, MRV)
- * No X-ray radiation (NMR = no more radiation)
- * But not suitable for patients with Cardiac pace makers,
Fero-magnetic metallic foreign bodies.
- Bony structure not visualised
- Small children & restless/un-cooperative adults need GA ,
(with MRI compatible ventilators)

4. Cerebral Angiogram (DSA):

- * Needed only in selected cases
- * Vascular tumours, eg. Meningioma, Haemangioblastoma
- * Vasculature of tumour, displacement or encasement of normal blood vessels is visualised.
- * Occlusion of venous sinuses is shown
- * Embolisation of tumour blood supply will reduce blood loss during operation

(After embolisation, operation to remove tumour should be done the same day or the following day, as the infarcted tumour may swell up .

5. *Neuronavigation:*

CT/MRI with Fiducials to pin-point the lesion, choose entry point and identify and avoid damage to vital structures:

6. *Frame Based Stereotaxy:*

7. *Search for Primary Tumour:*

- Chest X ray ; CT Thorax ;
- Skeletal survey ;
- Ultrasound ;
- Pit scan ;

8. *Radiology for complications and recurrence:*

CT / MRI , Rarely DSA

Postoperative haematoma , brain swelling , infarction ,
Hydrocephalus , Infection;

Residual tumour , Recurrent tumour , Radiation necrosis.

9. Future Directions:

-Intra-operative CT / MRI / DSA

-Emergency Neuro-radiological intervention
for acute ischemic stroke
(CT, iv thrombolysis, MRI, DSA, IA thrombolysis)

! MRA will soon replace diagnostic DSA:

!! Multi-slice CT, available

!!! Whole body CT / MRI for screening

CT & MRI have revolutionized NEUROSURGERY

Air encephalogram, ventriculogram, cisternogram, isotope scans

and myelogram are either obsolete or rarely seen in practice.

CT & MRI are the most important advances

in medical science, in the past 25 years ;

The technology is rapidly advancing.