The ROYAL MARSDEN
NHS Foundation Trust

Imaging explained – a primary care guide

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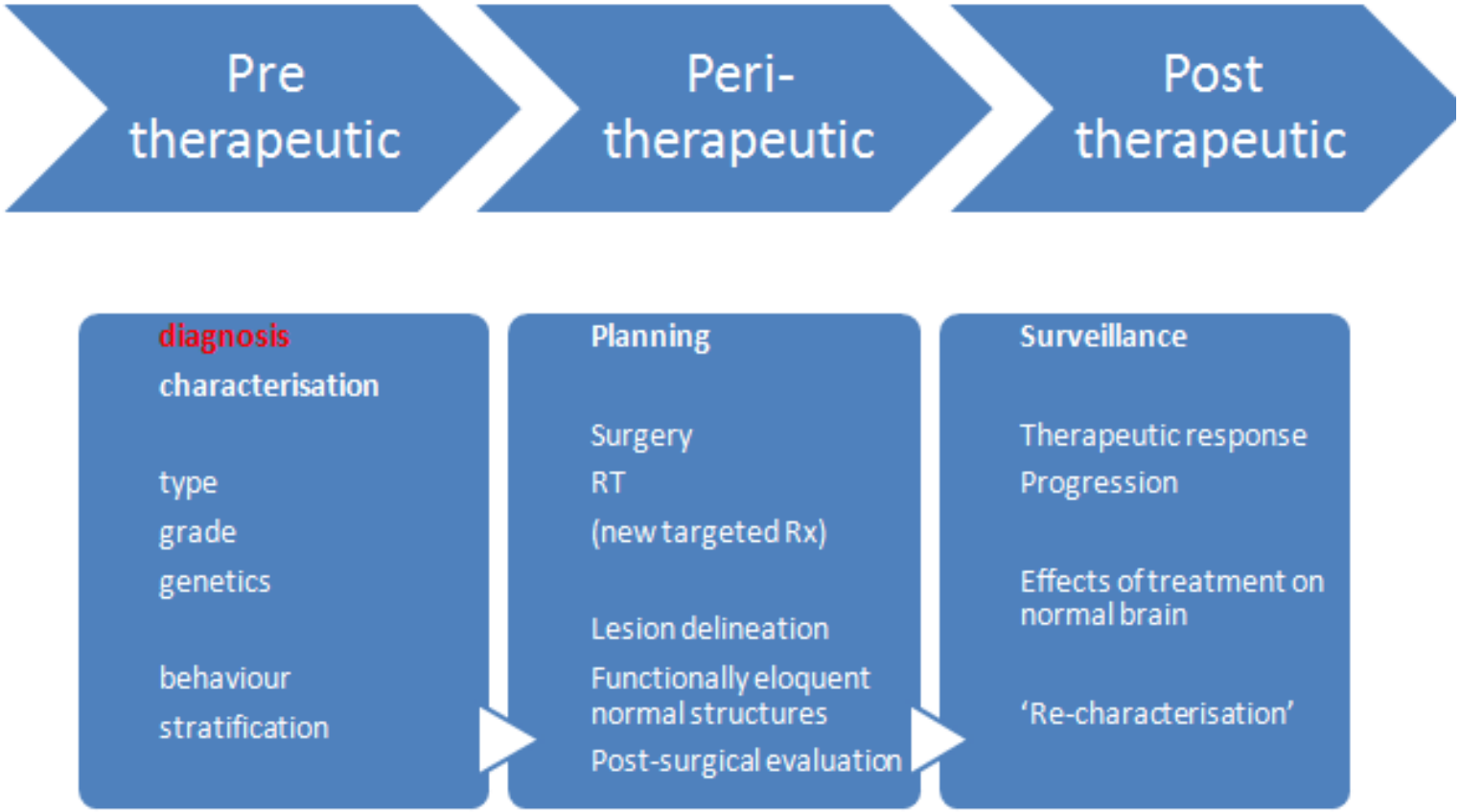
NHS

Imaging referrals

- Investigating suspected intracranial tumours
- Suspected metastatic spinal cord compression

Direct GP access to CT and MRI

Why image brain tumours?



Clinical presentation

- Seizures (typically focal onset)
- Fixed focal neurological deficit; motor, sensory
- Cognitive impairment
- Headaches (very rarely sole presenting feature)

Brain tumours are relatively rare

Intracranial masses

- Intrinsic brain masses
- Primary tumours
- Metastases (esp breast, lung, melanoma, colon; not prostate
- Non-neoplastic lesions

- Extra-axial lesions
- Meningiomas
- Metastases – dural, leptomeningeal, bony
- Non-neoplastic

Brain tumours

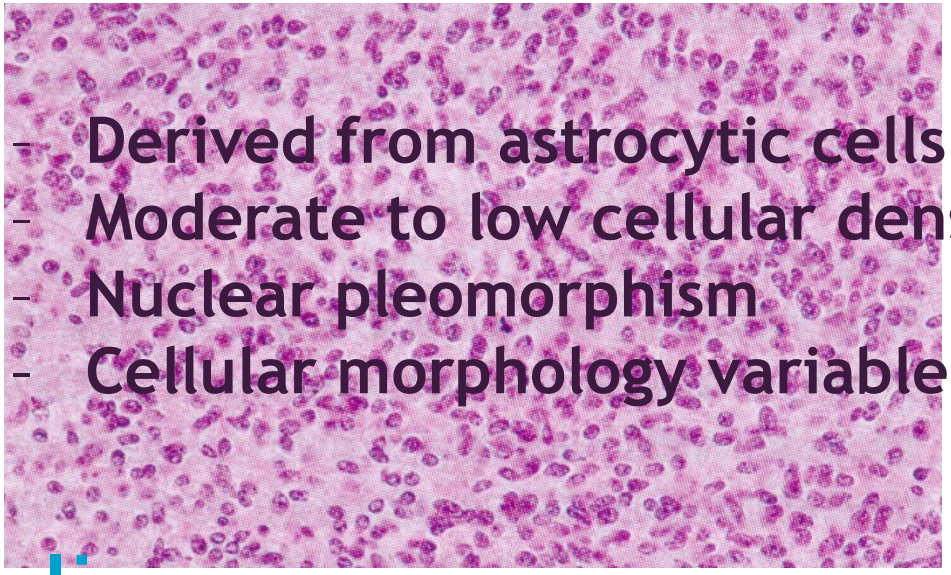
- Encapsulated gliomas (WHO grade I)

- Adult diffuse gliomas (WHO grade II)
  diffuse astrocytomas
  low grade oligodendroglioma
  oligoastrocytoma

- Glioblastoma (GBM, WHO grade IV) primary/secondary

- Others – ependymoma, medulloblastoma, haemangioblastoma

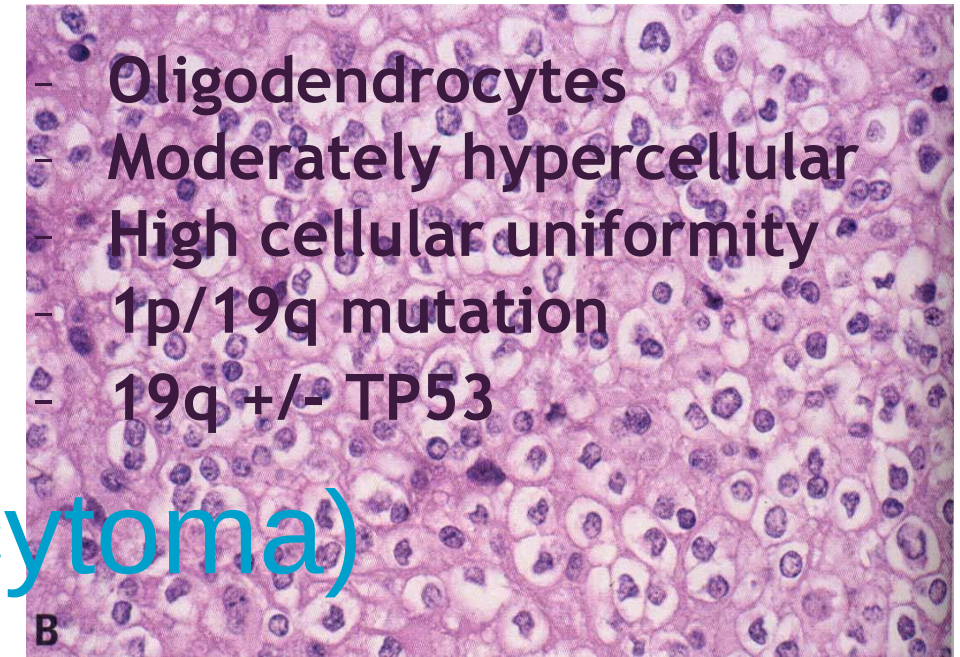
Astrocytoma



- Derived from astrocytic cells
- Moderate to low cellular density
- Nuclear pleomorphism
- Cellular morphology variable

Oligodendroglioma

Better prognosis

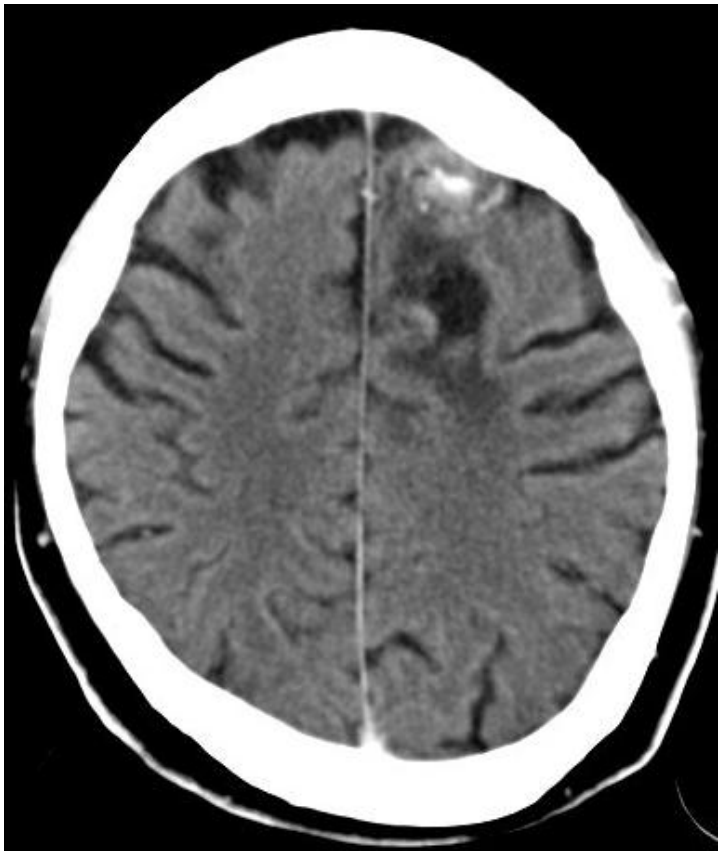


- Oligodendrocytes
- Moderately hypercellular
- High cellular uniformity
- 1p/19q mutation
- 19q +/- TP53

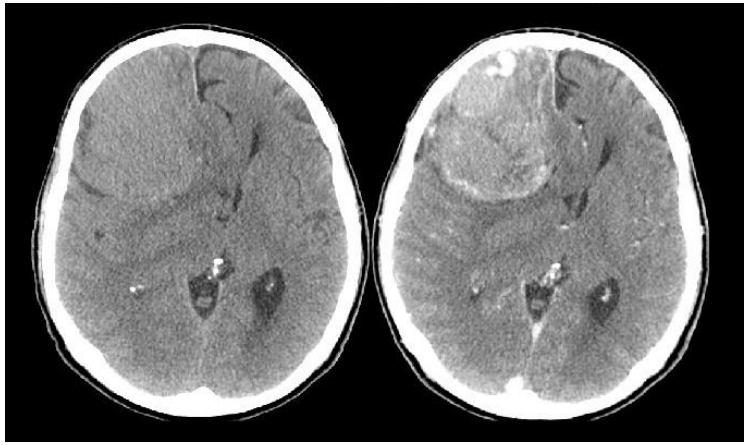
(Oligoastrocytoma)

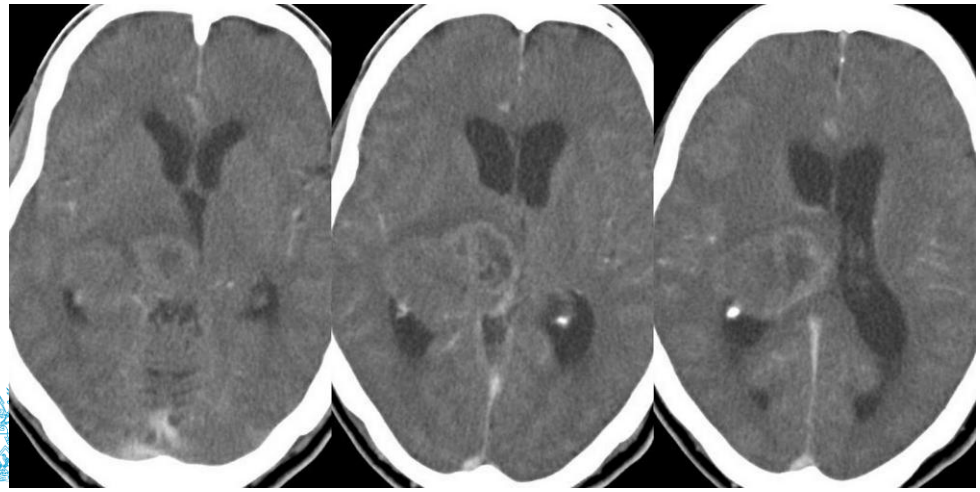
CT

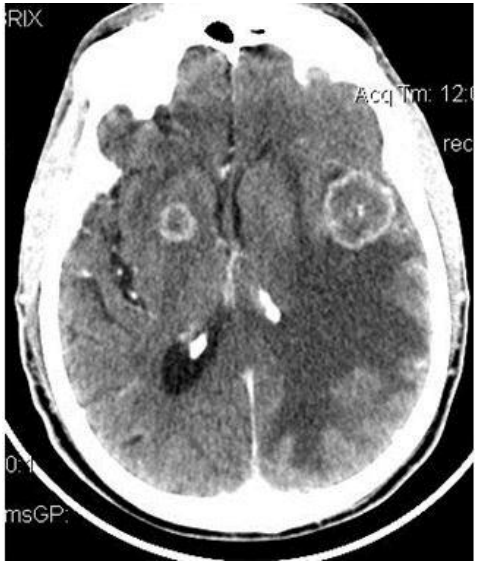
- Accessible, quick
- Good for detecting large lesions (and bones, calcification and haemorrhage)
- Limited tissue differentiation



CT



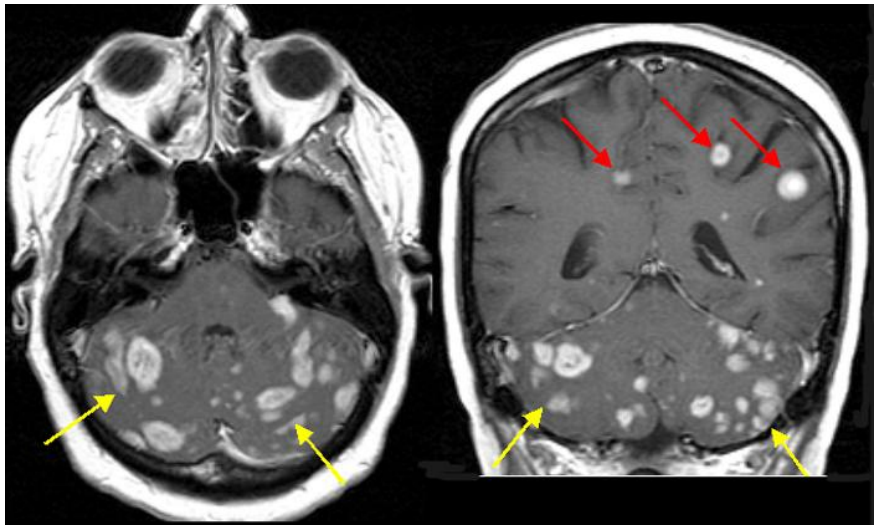


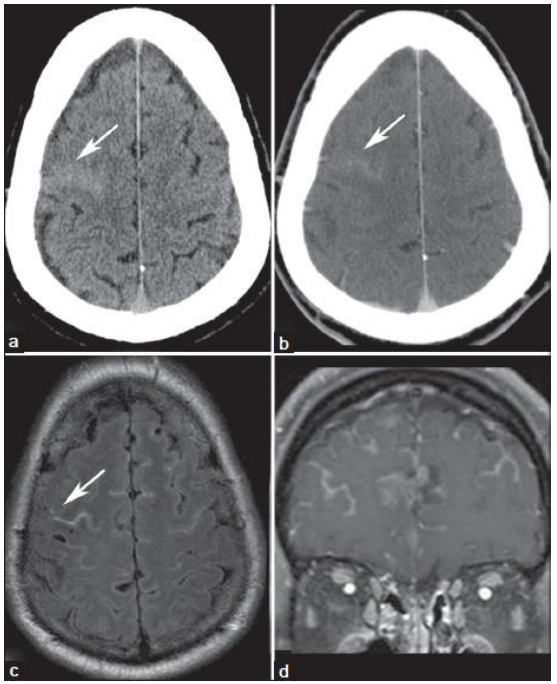


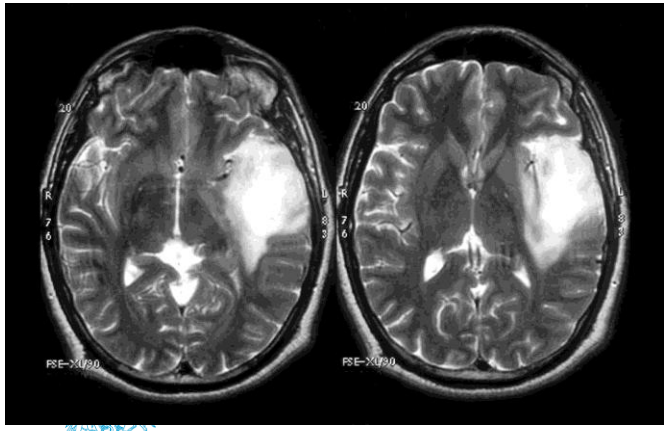
MRI

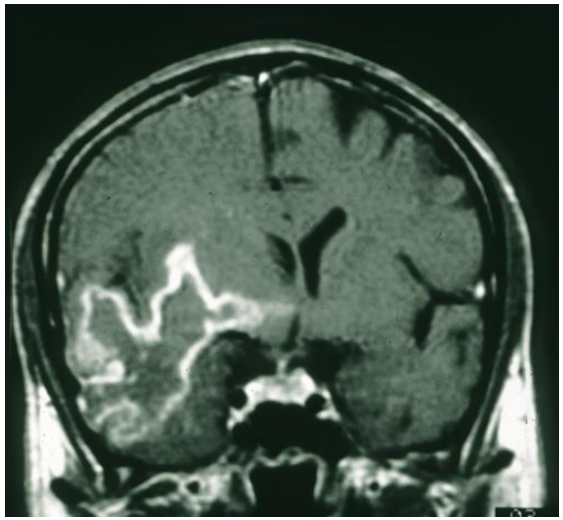
- Better lesion characterisation
- More sensitive – small lesions
- Longer scan
- Contraindications
- Tolerability
- Demand on service

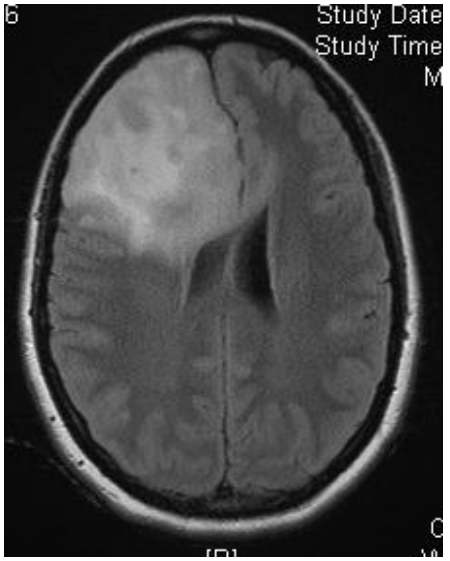
MRI



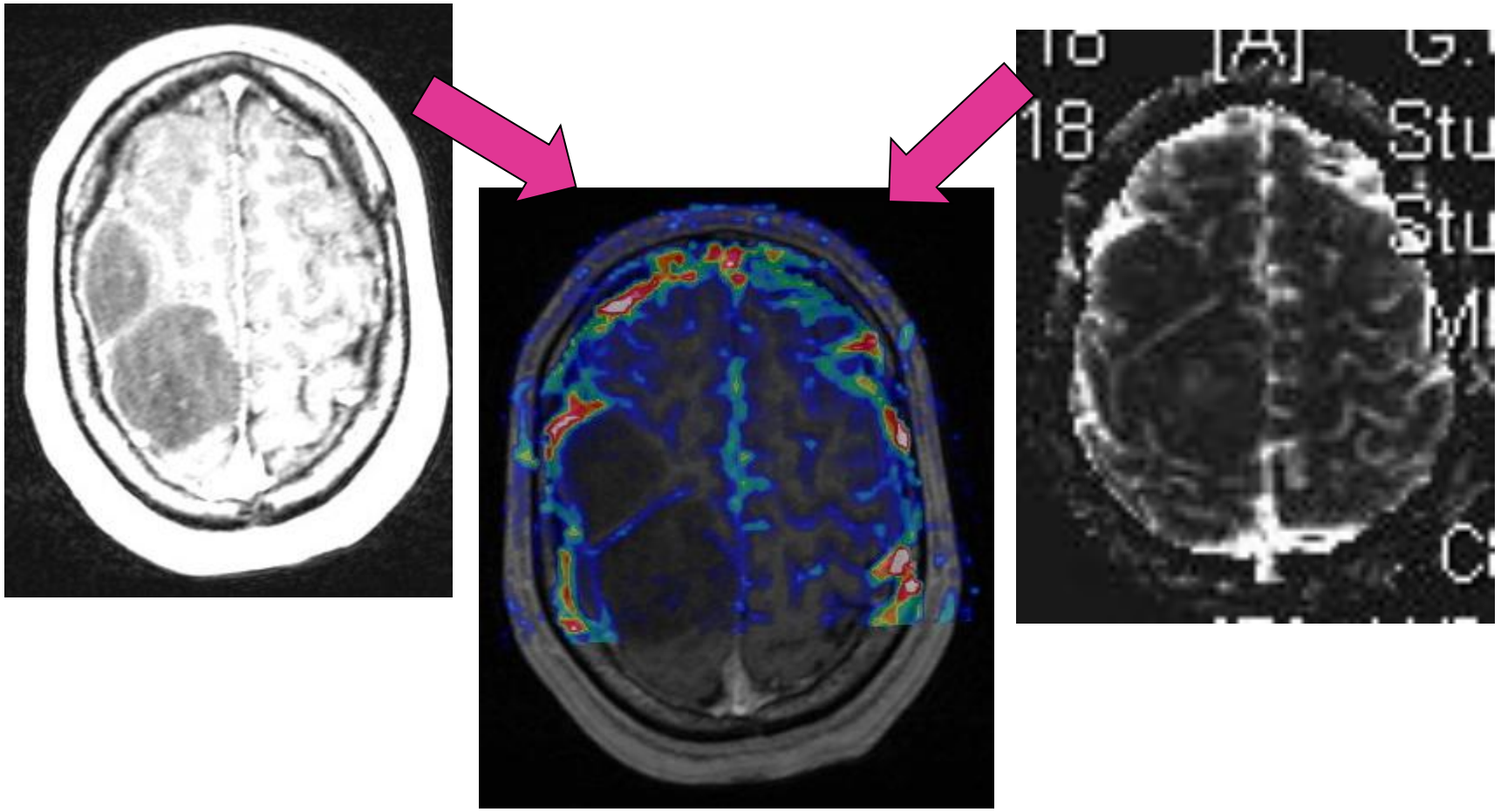


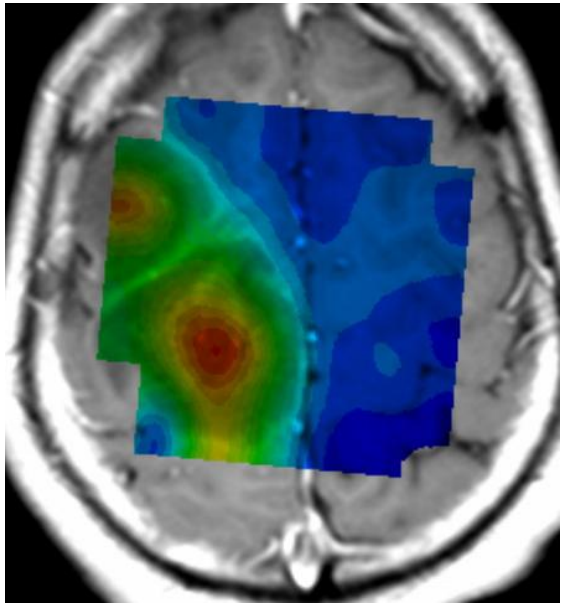


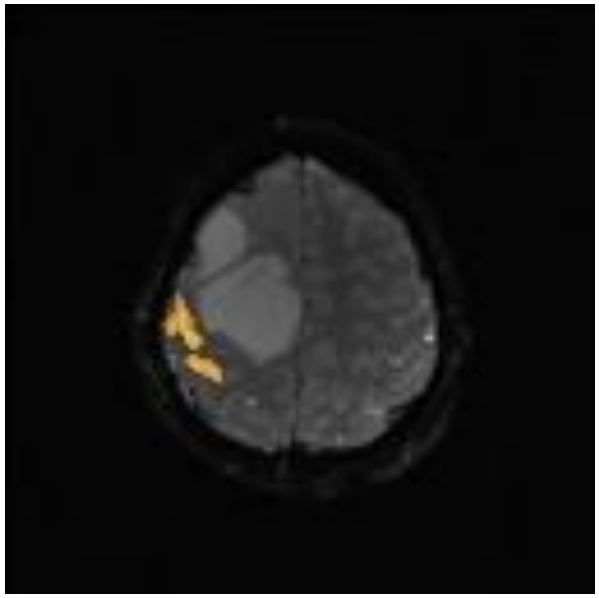


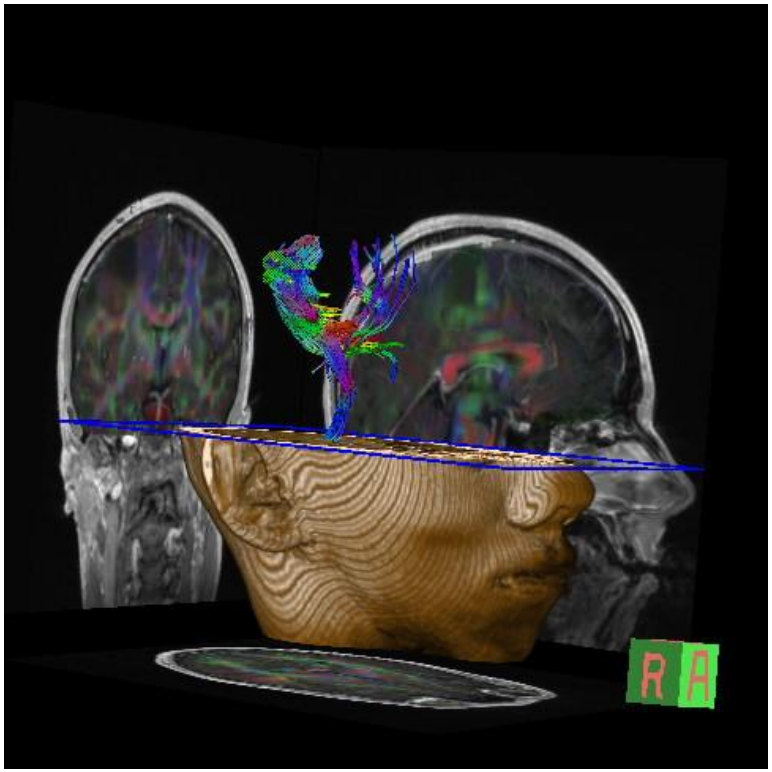


Multimodal MRI








R
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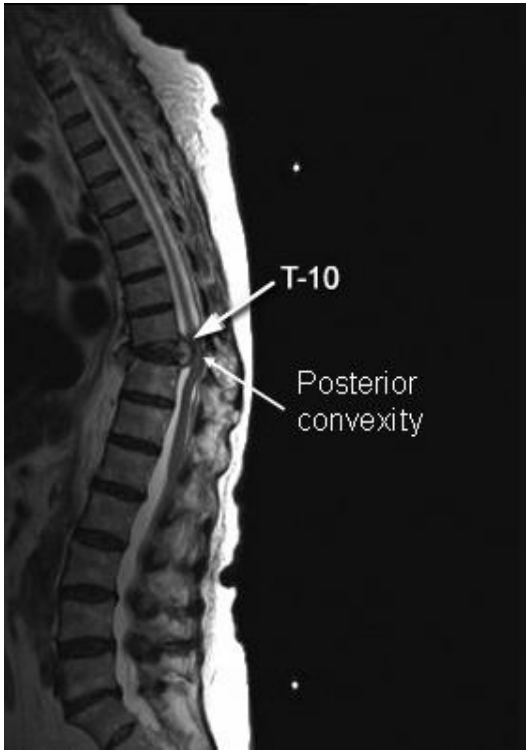
Metastatic spinal cord/cauda equina compression

- Usually bony metastases (lymphoma, myeloma)
- Central canal compromise
- Level influences clinical presentation
- Radicular compromise

MRI investigation of choice

Spinal MRI



MSCC pathways

Well defined pathway :

- Known primary cancer diagnosis
- Spinal pain suggestive of metastatic disease – MRI within one week
- Spinal pain and signs (symptoms?) suggestive of cord or cauda equina compression – MRI within 24 hours (sooner in some cases)
  - Sensory level, weakness, long tract signs (cord), decreased anal tone, urinary retention.

Thanks