



## REMARKS

### 1 General

- 1.1 Thunderclap headache refers to acute onset of the worst headache in the individual's life.
- 1.2 Primary headache disorders include migraine, tension and cluster headache. However, a change in the pattern of the headache should raise the concern of a superimposed organic lesion.
- 1.3 Red flag symptoms raise the suspicion of organic lesions, including:
  - 1.3.1 New headache in an older population
  - 1.3.2 New onset of headache with history of cancer or immunodeficiency
  - 1.3.3 New onset of headache in a patient on anti-coagulation therapy
  - 1.3.4 Headache with alterations in mental state
  - 1.3.5 Headache with fever, neck stiffness and meningeal signs
  - 1.3.6 Headache with focal neurological deficit if not previously documented as a migraine with aura
  - 1.3.7 Substance abuse with amphetamine or cocaine
  - 1.3.8 Patient is pregnant\* or post-partum
  - 1.3.9 Headache causing awakening from sleep or worsened by Valsalva manoeuvre;
  - 1.3.10 Progressively worsening headache.

\*Radiation risk and benefit for examination in pregnant women should be weighted based on individual case. During pregnancy, imaging modalities not associated with ionizing radiation (e.g. MRI) should be considered when appropriate.
- 1.4 Some specific conditions which are extracranial causes of headache render further investigation with imaging:
  - 1.4.1 Middle or inner ear symptoms, including vertigo. If imaging is needed following specialist assessment, MRI is more sensitive, especially for acoustic neuromas.
  - 1.4.2 For sinus disease if there has been failure of maximum medical treatment, and / or suspected complications, e.g. orbital cellulitis or suspicion of malignancy.
  - 1.4.3 Congenital anomalies, benign and malignant neoplasms, trauma, vascular malformations, evaluation of palpable masses, planning and follow-up of radiotherapy.
  - 1.4.4 Orbital lesions, including eye trauma in which there may be an associated facial fracture. US may be appropriate for intraocular lesions. CT scan may also be indicated for strong suspicion of an intraocular foreign body that has not been shown on X-ray.
  - 1.4.5 Fractures of the temporal bone, skull, and face.
  - 1.4.6 Evaluation of the skull base including primary and secondary bone lesions.

### 2 Plain radiograph

- 2.1 Plain skull radiography rarely contributes to the management of acute non-traumatic headache. Its main role is probably limited to headache of paranasal sinus origin, in which CT is still the preferred modality of examination.

**3 CT**

**3.1** CT brain is sensitive to detect extravasated blood. Bony pathology is also best depicted by CT.

**4 MRI**

**4.1** MRI is superior to CT in the assessment of most intracranial pathologies with the exception of acute haemorrhage and bony / calcific lesions.

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## REFERENCES

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