

Evidence Discussion (HD32.1)

- When evaluating suspected or known issues involving the eye, orbit, and/or brain, consideration must be given to:
 - whether or not imaging is required,
 - which body area should be imaged, i.e. brain, orbits, or both, and
 - which modality, MRI or CT, would best provide the information needed while exposing an individual to the least risk.
- The body area imaged should be reasonably expected to be potentially involved in the suspected condition. The angles of and distance between each view differ between brain imaging and orbital imaging. There are circumstances in which imaging of both the brain and orbits may be useful, as in conditions that can affect both locations or for which evaluation by the different techniques provides useful information.
- Soft tissue detail such as neural tissue is well-visualized by MRI.
- Calcification, bone, and hemorrhages are well-visualized by CT.
- MRI carries no risk of radiation exposure but is sensitive to motion, takes longer, and may require sedation or anesthesia for a longer duration than would be required for CT. Certain populations may have psychological or physical difficulty undergoing MRI scans, including children, those with obesity, movement disorders, anxiety or claustrophobia.
- CT carries risk of radiation exposure but is less sensitive to motion and has a shorter duration than MRI. Imaging more than one body area increases the exposure dose. Certain populations may carry higher risk of detrimental effects from exposure, including children.
- Radiation exposure of the ocular lens contributes to cataract formation. Radiation doses vary between CT scans due to differences in scanning technique, number of images taken per CT, body area scanned, CT machines used, and facility protocols. The cancer risk of radiation exposure in diagnostic CT is considered extremely low, and the benefit of an appropriately indicated CT examination far outweighs the potential risk.¹ Cataract formation is among the earliest radiation associated pathologies in the eye. The Beaver Dam Eye Study, a population-based study of common age-related eye diseases, found that nuclear sclerosis and posterior subcapsular opacity were significantly associated with CAT scans.²

References

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