Orbits, Vision, and Visual Loss

Seeing (vision) is a complicated system that converts light coming in through the eyes into various signals that are received by different parts of the brain. MRI (https://www.radiologyinfo.org/en/info/mri-brain) and CT (https://www.radiologyinfo.org/en/info/headct) are used to diagnose diseases of the eye and eye cavity in the skull (orbits). MRI is good for examining soft tissues, and CT is useful to examine orbits, muscles, fat, foreign bodies, accumulation of calcium salts in tissues (calcifications), and bones. When vascular (blood vessel) disease is suspected, CT angiography (CTA) (https://www.radiologyinfo.org/en/info/angioct) or MR angiography (MRA) (https://www.radiologyinfo.org/en/info/angiomr) can be added to initial CT or MRI tests. MRA is preferred in the nontrauma setting. Common vision problems and the appropriate imaging follow-ups include:

- CT head and orbits without contrast is the most appropriate imaging evaluation for a traumatic loss of vision. CTA is appropriate for suspected vascular injury. MRI is an appropriate follow-up to an inconclusive CT scan or suspected damage of the optic nerve.
- Bulging out or caving in of the eyeball, infections, abnormal tissue growths (such as a tumor), and loss of control of eye movement are best assessed with MRI of the orbits without and with contrast and CT of the orbits with contrast. Both scans are complementary and appropriate.
- A mass on or inflammation of the optic nerve is best assessed on an MRI head and orbits without and with contrast.

When the correct orbital disease is identified in a clinical examination performed by a doctor or on a laboratory result, more imaging tests are usually not appropriate.

— By Frank Rybicki Jr., Bruno Policeni, MBA, MD. This information originally appeared in the *Journal of the American College of Radiology*.

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