

## Assessment of Orbital Masses Using Dynamic Contrast-Enhanced MR Imaging

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**BACKGROUNDS AND PURPOSE:** Morphologic assessment by conventional MR imaging of the orbital masses is at best, insensitive. We assessed the ability of dynamic contrast-enhanced MR imaging to differentiate benign masses from malignant masses of the orbit.

**MATERIALS AND METHODS:** Eighty-three patients with the orbital masses confirmed by pathology including twenty malignant masses and sixty-three benign masses were studied with the use of a head phased array coil. Anatomic imaging included spin-echo T1-weighted, T2-weighted and contrast-enhanced T1-weighted imaging. The dynamic contrast-enhanced MR imaging was performed by using a 2D fast spoiled gradient echo sequence with single dose bolus injection of contrast agent. Calculated values included time to peak (T<sub>peak</sub>), washout ratio (WR), slope, maximum contrast index (MCI). The types of the time-intensity curves (TICs) were studied.

**RESULTS:** There was significantly longer T<sub>peak</sub> (P<0.01) and slower WR (P<0.01) in the inflammatory pseudotumors compared with the lymphomas. Pleomorphic adenomas of the lacrimal gland had a significantly longer T<sub>peak</sub> (P<0.01), slower WR (P<0.01), lower slope (P<0.01) and lower MCI (P<0.05) than did carcinomas of the lacrimal gland. Benign vascular tumors had a significantly longer T<sub>peak</sub> (P<0.01), slower WR (P<0.01), lower slope (P<0.01) than did malignant vascular tumors. Of masses within the extraconal space, There was longer T<sub>peak</sub> (P<0.05) and slower WR (P<0.05) in the benign vascular tumors and neurogenic tumors compared with the malignant vascular tumors. Of masses involving both the extra and intra-conal spaces, Various benign lesions had longer T<sub>peak</sub> (P<0.01) and slower WR (P<0.01) than did lymphomas. There was no significant difference between the benign tumors within the intraconal space (P>0.05). Moreover, the diagnostic specificity of benign and malignant tumors with the use of types of TICs based on T<sub>peak</sub> and WR was 80.9% and 90.1%, respectively.

**CONCLUSION:** Analysis of dynamic contrast-enhanced MR imaging can differentiate benign from malignant masses of the orbit.