Magnetic Resonance Imaging Versus Computed Tomography in Temporal Bone Carcinoma — Radiological and Pathological Correlation

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INTRODUCTION

Clinical staging of squamous cell carcinoma of the EAC and temporal bone, initially proposed as the Pittsburgh tumor staging system in 1990 and revised in 2000, relies on physical exam and imaging characteristics found on CT scanning of the temporal bone.

This includes looking for evidence of bony erosion, soft tissue involvement, location of the tumor within and outside the EAC and temporal bone as well as evidence of facial paresis and facial nerve involvement. Since the time the staging system was proposed, evaluation of EAC carcinoma now routinely involves MRI.

However, it remains unclear if MRI adds to the information gained on physical exam and CT imaging or if it would change the management or clinical staging of the cancer.

METHODS AND MATERIALS

This is a retrospective analysis of patients with carcinoma of the EAC and temporal bone using chart review that have been treated by the senior author at Our Lady of the Lake Regional Medical Center (OLLRMC) in Baton Rouge, LA from 2008 to 2014.

After identification of the patients, it was determined which of them had both preoperative CT and MR imaging available. It was also determined which of the patients underwent surgical treatment with available postoperative histopathology reports.

11 cases of EAC and temporal bone carcinoma among 10 patients were identified for review, 9 patients of which whose treatment included temporal bone resection at our institution over the past 3 years. Their preoperative CT and MRI scans were systematically reviewed for tumor involvement in 10 anatomic areas involving and surrounding the temporal bone. These were compared to results found on final histopathology.

Among the 10 cases that underwent temporal bone resection and parotidectomy, 22 anatomic areas suspicious for tumor involvement identified on CT imaging and MR imaging were confirmed on final histopathology. An additional 4 areas (3 parotid glands and 1 area of regional lymph nodes) suspicious for tumor involvement identified on CT imaging and MR imaging were found to be benign on final histopathology.

In conclusion, the addition of MRI in the preoperative evaluation of these patients confirmed the extent of tumor involvement and staging seen on CT and did not identify additional tumor or facial nerve involvement in most cases except for one advanced case. In this case, the addition of the MRI findings changed the treatment plan.

While CT remains the imaging gold-standard for preoperative evaluation and staging, MRI should be obtained in evaluating advanced temporal bone tumors.

REFERENCES