**Abstract**

Objective  
To determine objective imaging criteria to identify extracapsular cysts from malignant cystic adenopathy

Methods  
A retrospective analysis was performed of patients who underwent contrast enhanced neck CT between July 2003 and July 2009 and were diagnosed with either a branchial cyst (BNC) or extracapsular, phlegmonous, or laryngeal squamous cell carcinoma (SCC). Each CT was reviewed by an attending radiologist for and for each cyst or lymph node(s) present. Two reviewers measured the size of the neck, thickness, width of mural nodules, homogeneity, cyst capsule extension, calcifications, and fat stranding were recorded. T1 and Chi-squared tests were used to analyse differences between the two groups.

Results  
188 patient images were reviewed; 22 patients with BCCs and 38 patients with SCC met inclusion criteria. 72 branchial cysts (BNC) and 61 malignant cystic lymph nodes were found. Significant differences between the two groups were found with regard to size, CT density, septations, homogeneity and cyst capsule extension. BNCs tended to be larger, less dense, homogenous, and had no extracapsular extension when compared to the malignant nodes.

Conclusion  
Malignancy of cystic neck masses in the neck may be delayed in diagnosis, a delayed neck tumor spillage and spread. We found that BNCs and SCCs and SCCs may be differentiated using CT imaging criteria such as size, CT density, septations, homogeneity, and cyst capsule extension. These findings, if confirmed, may influence the clinical management of these conditions.}

**Introduction**

The incidence of head and neck cancers is reported to be between 3.6% - 3.8% of all skin cancers. The majority of which are due to squamous cell carcinoma (SCC). SCC is known to metastasize via lymphatic spread as opposed to being hematogenous spread, to distant organs. When using CT imaging to survey SCC patients, it is important to be able to differentiate metastases to the lymph nodes from benign causes of cervical lymphadenopathy and benign congenital masses. Several criteria have been established in the imaging literature that suggest the likelihood of malignancy. Numerical differences in the neck, size of the neck, thickness, width of mural nodules, homogeneity, cyst capsule extension, calcifications, and fat stranding were recorded. T1 and Chi-squared tests were used to analyse differences between the two groups.

**Results**

188 patient images were reviewed; 22 patients with BNCs and 38 patients with SCC met inclusion criteria. 72 branchial cysts (BNC) and 61 malignant cystic lymph nodes were found. Significant differences between the two groups were found with regard to size, CT density, septations, homogeneity and cyst capsule extension. BNCs tended to be larger, less dense, homogenous, and had no extracapsular extension when compared to the malignant nodes.

**Conclusion**

Malignancy of cystic neck masses in the neck may be delayed in diagnosis, a delayed neck tumor spillage and spread. We found that BNCs and SCCs may be differentiated using CT imaging criteria such as size, CT density, septations, homogeneity, and cyst capsule extension. These findings, if confirmed, may influence the clinical management of these conditions.