Calcifications in Thyroid Ultrasonography and Thyroid Carcinoma

ABSTRACT

Background: Thyroid nodules are a common disease entity occurring in 5-10% of the general population and increasing with age. Their detection on ultrasonography ranges from 13% to 67%. Calcifications on ultrasound may occur in both benign and malignant diseases but have been cited for increased risk of thyroid carcinoma.

Objective: To determine the association of calcifications found on thyroid ultrasonography and the different types of calcifications with thyroid carcinoma.

Methods:
- Design: Retrospective Study
- Setting: Tertiary Private Hospital
- Participants: 126 patients with pre-operative thyroid or neck ultrasonography who subsequently underwent thyroidectomy (total or subtotal, with or without frozen section) were selected from a database covering a one-year period from January to December 2012. The presence and type of calcification on ultrasonography was correlated with the final histopathologic report for a diagnosis of thyroid carcinoma. Sensitivity, specificity, positive and negative predictive values were obtained.

Results: 51 out of 126 studies (40%) were observed to have calcifications of any description in both histologically benign (41%) and malignant (59%) nodules. Calcifications seen in malignancy arose from papillary carcinoma (86%). Follicular carcinoma and others (Plasmacytoma and Lymphoma) accounted for 7% each. The peripheral type of calcification was most prevalent accounting for 37% (11 out of 30). The sensitivity of detecting calcifications on ultrasonography is 58.82%, specificity 81.33%, positive predictive value 68.18% and negative predictive value 74.38%. Chi square test computed was 21.54 (P <0.05).

Conclusion: There was an association between calcification found on ultrasonography and thyroid carcinoma and 86% of the calcifications were peripheral patterns mostly found in papillary thyroid carcinomas. Ultrasonography alone is not sufficient in diagnosing thyroid carcinoma but may increase the suspicion of malignancy depending on the type of calcification.

Keywords: Thyroid carcinoma, papillary carcinoma, calcifications, ultrasonography