

MALIGNANT CHARACTERISTICS IN SONOGRAPHY ARE ASSOCIATED WITH BRAF MUTATION IN FOLLICULAR VARIANT PAPILLARY THYROID CARCINOMA

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Background/Purpose: Follicular variant of papillary thyroid carcinoma (FVPTC) is characterized by a follicular growth pattern and cytologic features of papillary thyroid carcinoma (PTC). The association between genetic alteration and sonographic features of FVPTC is not well studied. We analyzed sonographic findings of FVPTC according to BRAF mutation status.

Methods: We collected data of the patients who underwent thyroidectomy for FVPTC ≥ 5 mm from 2009 to 2012. Total 148 patients were enrolled and preoperative neck sonographic images were reviewed by two different head and neck radiologists. Internal content, echogenicity, shape, calcification, and margin were evaluated. The sonographical diagnosis of malignancy was made when at least one of the following features were present; markedly hypoechoic, taller than wide, presence of microcalcification or macrocalcification, and spiculated margin.

Results: BRAF mutation was present in 47 (31.8%) patients. The mean age of the patients with BRAF mutation was significantly higher (54.6 vs 48.2, $P = 0.004$). BRAF mutation was associated with smaller tumor size (1.1 vs 1.6 cm, $P = 0.001$), markedly hypoechoic (38.3% vs 17.8%, $P = 0.007$), spiculated margin (38.3% vs 9.9%, $P < 0.001$), and diagnosis of malignancy in sonography (85.1% vs 43.6%, $P < 0.001$).

Discussion & Conclusion: FVPTC with BRAF mutation is associated with malignant characteristics in sonography. Preoperative sonographic findings are useful in predicting BRAF mutation status and might be helpful in decision of treatment plan.