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Usefulness of core-needle biopsy of thyroid nodules with macrocalcification in initial and repeat workups: comparison with fine needle aspiration

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PURPOSE: Macrocalcification in thyroid nodule has been known to be an important factor related to high inadequate sample rate of fine-needle aspiration (FNA). Recently, core-needle biopsy (CNB) has been reported to be useful in patients with nondiagnostic reading in prior FNA. The purpose of this study was to determine whether CNB provides better diagnostic information for thyroid nodules with macrocalcification in initial and repeat workups as compared with FNA.

MATERIALS AND METHODS: The study included 147 thyroid nodules with macrocalcification from 144 consecutive patients who underwent FNA and CNB simultaneously for each nodule. The final diagnoses of thyroid nodules were obtained in 77 nodules (benign 45, malignant 32). Two blinded radiologists retrospectively evaluated ultrasonographic features of nodule size, echogenicity, and proportion of calcification in entire nodule volume and analyzed the association between these features and inadequate samples in FNA and CNB. The nondiagnostic readings of FNA and CNB were compared. The diagnostic sensitivities of FNA, CNB and combination of FNA and CNB for malignancy in thyroid nodules were also assessed.

RESULTS: Larger proportion of calcification than 1/3 in entire nodule volume is the only factor for nondiagnostic reading in FNA ($p = 0.021$). The nondiagnostic readings of CNB were lower than those of FNA in initial group (1.2% vs. 25.0%, $p < 0.001$) and repeat group (2.2% vs. 42.2%, $p < 0.001$). The sensitivity of combination of FNA and CNB for thyroid malignancy was significantly higher than FNA alone in initial group (95.8% vs. 75.0%, $p = 0.021$) and repeat group (100% vs. 62.5%).

CONCLUSION: In initial and repeat workups of thyroid nodules with macrocalcification, CNB is more useful to reduce nondiagnostic reading and to diagnose thyroid malignancy than FNA.