

Can Vibro-acoustography Detect Thyroid Nodules?

The gold standard for diagnosing benign versus malignant thyroid nodules is fine needle aspiration biopsy. This study evaluated the a noninvasive ultrasound-based method, vibro-acoustography (VA), for thyroid imaging and determined the feasibility and challenges of VA in detecting nodules in the thyroid.

In an in vitro study, experiments were conducted on a number of excised thyroid specimens randomly taken from autopsy. Three types of images were acquired from most of the specimens: X-ray, B-mode ultrasound, and vibro-acoustography. The main study included results from performing VA and B-mode ultrasound imaging on 24 human subjects with thyroid nodules.

In vitro vibro-acoustography images displayed soft tissue structures, microcalcifications, cysts and nodules with high contrast and no speckle. All the US proven nodules and all the X-ray proven calcifications of thyroid tissues were detected by VA. In vivo results showed 100% of US proven calcifications and 91% of the US detected nodules were identified by VA, however, some artifacts were present in some cases.

The authors conclude that in vitro and in vivo VA images show promising results for delineating the detailed structure of the thyroid, finding nodules and in particular calcifications with greater clarity compared to US. VA may be a suitable imaging modality for clinical thyroid imaging but further research is needed.

Reference: In vivo thyroid vibro-acoustography: a pilot study. Azra Alizad, Matthew W Urban, John C Morris, Carl C Reading, Randall R Kinnick, James F Greenleaf and Mostafa Fatemi.

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