

## RE: A Risk Prediction Model of Thyroid Cancer in Euthyroid Asymptomatic Patients: Importance of Model Validation

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Dear Sir,

With great interest, we read the article “risk of thyroid cancer in euthyroid asymptomatic patients with thyroid nodules, with an emphasis on family history of thyroid cancer” by Hwang et al. (1). The paper concludes that a solitary lesion on ultrasonography (US) features observed on US, and the male gender ( $p < 0.001$ ) were significant independent risk factors for thyroid malignancy (1). We would like to thank the authors for this highly useful work.

The authors developed a multivariate regression prediction model to investigate the independent predictive factors associated with thyroid cancer in euthyroid asymptomatic patients. Model predictors include age, male gender, 1st degree family history, solitary lesion on US, serum TSH level, and TSH grade. Multivariate analysis confirmed that a solitary lesion on US (odds ratio [OR], 1.413; 95%

confidence interval [CI], 1.014–1.970;  $p = 0.041$ ), US features (OR, 39.778; 95% CI, 27.953–56.606;  $p < 0.001$ ), and male gender (OR, 1.994; 95% CI, 1.360–2.925;  $p < 0.001$ ) was predictive of euthyroid asymptomatic patients with thyroid nodules. However, model validation is possibly the most important step in the model building sequence. Once the models are validated, it would be easy to apply for preoperative individualized prediction of euthyroid asymptomatic patients having thyroid nodules. It is known that split-sample development and validation sets were generally used (2). Therefore, we suggest that the research might be improved by using split-sample development and validation for assessing euthyroid asymptomatic patients with thyroid nodules, with emphasis being on family history of thyroid cancer. The entire data is randomly partitioned into a training set and a test set. Internal validation was performed by applying the fitted model derived from the training set to the test set (3). Finally, the C-index and calibration curve were derived on the basis of the regression analysis. Future research in large cohorts should focus on external validations.

### REFERENCES

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