

2nd International Conference on

Cytopathology & Histopathology

August 10-12, 2016 Las Vegas, USA

Which is the best test method to increase accuracy in thyroid nodules classified as indeterminate at FNA cytology? A comparative analysis of diagnostic performance, feasibility and cost of several different test methods

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Since it is not possible to recognize malignancy at FNA cytology in thyroid indeterminate nodules, surgery is recommended for all of them, but cancer rate at the final histology is <30%. Many test methods have been proposed for increasing the diagnostic accuracy in these lesions and new emerging molecular based test methods have been developed and commercialized. To allow a more cost conscious clinical management of patients bearing such nodules, we compared technical features, feasibility, diagnostic performance and cost of the following test methods: Galectin-3-ICC, FDG-PET/CT, GEC alone and GEC+BRAF, thyroid cancer mutation/fusion panel, alone and Plus miRNA GEC, thyroid cancer mutation/fusion panel by NGS and TSHR mRNA blood assay. FDG-PET/CT was the best rule out (sensitivity 95%) and TSH mRNA blood assays the best rule in (specificity 96%) test method with some bias for the latter. Mutation/fusion panel by NGS showed the highest accuracy (92%) and diagnostic odds ratio (DOR=121). Mutation/fusion panel alone and Plus miRNA GEC as well as TSHR mRNA blood assay showed very high DOR. Galectin-3-ICC approached the best performances both as a rule out (sensitivity 83%) and rule in (specificity 88%) test method with a good accuracy (87%) and DOR (38). Galectin-3-ICC is by far the cheapest one and it is the easiest one to be performed in different clinical settings. In conclusion, at this moment, the more accurate molecular based test methods are still very expensive and are restricted to few, highly specialized Centers. Galectin-3-ICC represents the most suitable screening test method for indeterminate thyroid nodules and deserves a central place in the diagnostic algorithm of indeterminate thyroid lesions.

Biography

Salvatore Sciacchitano has completed his MD and his PhD in La Sapienza University of Rome and his specialization in Endocrinology at Tor Vergata University of Rome. From 1994 to 1997 he was Fogarty Visiting Fellow at the Diabetes Branch of the NIDDK/NIH in Bethesda, MD. He is a Professor in Endocrinology at the University La Sapienza of Rome and Chief of the Laboratory of Biomedical Research at the Niccolò Cusano University in Rome, Italy. He has published more than 38 papers in reputed journals and has been serving as an Editorial Board Member of *repute*.

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