



Case Report

Incidental Thyroid Malignancy Found in Thyroidectomies Guided by TI-RADS Imaging Scale for Multinodular Goitres - A Case Series

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Abstract

Thyroid cancers are on the uprise and clinicians seek novel methods and algorithms to achieve appropriate diagnosis. The positive outcomes and long disease-free intervals associated with thyroid cancers are the driving force behind screening thyroid nodules seen in single and multinodular disease. Though the fine needle aspiration cytology - FNAC remains the best tool for such conditions, in circumstances where this is either inappropriate or inadequate, the thyroid imaging reporting and data system - TI-RADS score in ultrasound examinations can also be used as an effective screening tool. This may guide selective patient follow-ups or even prompt surgery in patients with high scores where FNAC might be inadequate or inappropriate. We present a case series of 3 patients who had a high TI-RADS score and underwent total thyroidectomy for their multinodular thyroid goitre presentation. All the 3 patients were found to have thyroid cancers in the histopathology specimen. We recommend the use of this tool alongside the FNAC for malignancy evaluation of nodules seen in solitary or multi-nodular thyroid gland disease.

Keywords: FNAC; Multinodular goitre; Thyroidectomy; Thyroid malignancy; TI-RADS

Introduction

Multinodular Thyroid Goitre (MNG) is a quite common in presentation and poses the unique question of the presence of a neoplasm. Apart from FNAC of suspicious nodules, the Thyroid Imaging Reporting and Data System (TI-RADS) imaging scale uses the ultrasound for providing an indication of a possibly underlying neoplasm - malignancy. We present 3 patients who presented with MNGs and had a relatively high TI-RADS score. The histopathology of the said patients revealed thyroid cancer - both papillary and follicular types. We use this case series to understand the role of TI-RADS in MNGs for identifying underlying malignancies and to suggest its advantage over the feasibility of FNAC in a gland with multiple suspicious nodules.

Case Series Description

3 patients aged between 30 and 55 years presented to the surgical clinic with neck enlargements the evaluation of which revealed MNGs. The ultrasound findings of these patients suggested multiple nodules scattered in the thyroid gland with a TI-RADS score of 3 and above. The patients were informed about the risk of possible underlying malignancy and that it was not feasible to sample all the nodules with FNAC to achieve a diagnosis accurately. The patients chose to undergo a total thyroidectomy followed by histopathology evaluation of the gland. The histopathology of 2 patients revealed papillary carcinoma of the thyroid gland and 1 patient had follicular carcinoma of the thyroid gland with papillary-like nuclear features. Interestingly, 1 patient had Hashimoto's Thyroiditis, Lymphocytic Thyroiditis and Hyperplastic Nodule interspersed within the MNG along with the malignancy. All patients had non-invasive disease with complete

excision and follow-up with radio-iodine scan revealed complete excision not requiring further therapy. The patients are disease free on follow up and on thyroid supplementation.

Discussion

We find that with the increasing incidence of thyroid neoplasms more parameters are required to identify possible suspicious nodules and address them appropriately. Thyroid malignancies have a very high 5-year survival rates with longer Disease-Free Intervals (DFI) than most other malignancies. This should increase the inclination of the thyroid surgeon to attempt to convince the patient for thyroidectomy based on the high probability on a TI-RADS scan evaluation. Doing FNAC for several nodules in the same gland would be not always feasible and may also hold questions about accuracy and sampling.

Traditionally, FNAC of thyroid nodules have proven to be superior to ultrasound in evaluation of thyroid malignancies [1]. Of course, this is true for solitary nodules or dominant nodules where FNAC would be feasible and acquire adequate tissue sample for appropriate diagnosis. The incidence of thyroid malignancies in MNG was found to be around 8 % versus 15 % in Solitary Thyroid Nodules (SNT) [2]. Interestingly, FNAC was not found to be very accurate in the diagnosis of malignancy in MNGs. Thyroid fine needle aspiration was not found to be useful for differentiating MNG with malignant degeneration from benign MNG, as more than 80% of carcinomas went unnoticed; it provided a sensitivity of 17% for detecting carcinomas, rising to 26% if microcarcinomas are excluded [3]. Non-diagnostic FNACs remains a significant problem in the evaluation of thyroid nodules especially in MNGs. Approximately 12 % of patients with benign nodules were found to have thyroid malignancy in postoperative specimens. Clinicians should thus inform patients that there is a 5-15 % malignancy risk of initial nondiagnostic specimens [4].

The TI-RADS score obtained by the ultrasound of the thyroid gland has been controversial in providing accurate information about the thyroid malignancies in nodular thyroid diseases. Even though the accuracy of TI-RAD score remains low, the probability of cancers were more with TI-RADS 4 and 5 score [5]. Both MNGs and SNT nodules have equal probability of harbouring malignancy and the algorithms to evaluate the same are recommended to be the same [6]. With this background, it remains prudent to look out for malignancies in thyroid nodules irrespective of its presentation as SNT or MNG. Though FNAC still remains the best means of identifying and confirming a thyroid malignancy in nodules, it's feasibility with MNG presentation with small sized or scattered nodules should allow addition of TI-RADS score for evaluation of underlying thyroid malignancy [7]. The incidence of Focal Thyroid Incidentalomas (FTI) remains low (approx. 2%), yet it

represents approximately one - third of thyroid malignancies. It is in such presentations that TI-RADS, within a clinical careful approach, can discriminate with significant accuracy lesions at high risk of malignancy from those at low risk among FTIs. [8].

TI-RADS is found to be reliable to stratify the risk of cancer in focal TI. Considering the high cancer percentage expected in this setting of patients, those TIRADS with higher propensity should be guided to proceed for FNAC evaluation [9]. In such circumstances multiple nodules of varying sizes, close proximity to vascular structures, or inadequate sampling by attempted FNAC should not be roadblocks towards encouraging surgery for removal of gland and its appropriate diagnosis. Our case series attempts to address this exact dilemma in patients who present with MNG and high TI-RADS score but FNAC seems to be inappropriate or inadequate. In contrast, TI-RADS is a reliable classification system in routine practice that significantly reduces the number of unnecessary thyroid FNAs with higher specificity compared to local best practice guidelines [10]. In short, MNGs or SNTs with low TI-RADS score may be followed up instead of subjecting them to non-diagnostic FNACs, whereas high TI-RADS score should prompt a FNAC evaluation. In the event FNACs remains inadequate or inappropriate, these patients can be encouraged to proceed for surgery eliminating the dilemma of the histopathology of an FTI.

Conclusion

Our study encourages the use of TI-RADS score in evaluation of MNGs for possible thyroid malignancy. We recommend the additional use of FNAC for sampling dominant or solitary nodules in feasible circumstances and advise against sole dependence upon the score to suggest surgery in all MNGs. The decision should be weighted upon the presentation, TI-RADS score, and feasibility of performing the FNAC for the presentation of the MNG. The aim of this exercise should be to open more opportunities for screening thyroid malignancies and providing the best outcomes and DFIs.

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