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Letter to the Editor

Cytopathologist-Performed Thyroid Fine-Needle Aspiration: An Integrated Single-Institution Experience in Verona

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Summary
This letter contributes to the ongoing discussion on thyroid fine-needle aspiration (FNA) practices in Italy by presenting a single-institution experience in which cytopathologists directly perform FNAs within an integrated, multidisciplinary setting. Our model ensures close correlation between sampling and diagnosis, maintains high diagnostic standards, and enables rapid, patient-centered clinical decision-making. Additionally, it highlights the educational value of involving pathology residents and supports the role of the interventional pathologist to meet the evolving demands of precision medicine.

Keywords: thyroid, fine needle aspiration, interventional pathology

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Dear Editor-in-Chief,
We read with great interest the recent contribution by Acanfora *et al.* [1], which provides a valuable overview of current thyroid fine-needle aspiration (FNA) practices across Italy. The observation that the majority of FNAs (75%) are performed by non-pathologist clinicians [1] deserves particular attention [2] and prompted us to share the organizational model of our Institution, which is a University Hospital in the Northeast of Italy. In our Institution, thyroid FNAs are routinely performed by cytopathologists within a dedicated cytopathology setting, allowing for direct correlation between sampling and subsequent microscopic evaluation; the service has been active for approximately 15 years. Over last three years, the volume of thyroid FNAs remained stable, with 1042 cases in 2023, 990 in 2024, and 949 in 2025, consistent with the pre-COVID-19 workload reported by Acanfora *et al.*[1]. The Italian Consensus for the Classification and Reporting of Thyroid Cytology (ICCRTC) system[3,4] is adopted by our center, in line with its widespread use across Italy (approximately 90%) [1]. The distribution of cases among diagnostic categories is summarized in Table I. Overall, the cases are well distributed among categories and across years (in line with the data of the SIAPEC Cytopathology Comitee survey) [1], supporting the robustness and adherence to high quality standards of our activity. A rate of TIR1 cases exceeding the 10% threshold is not uncommon and is not solely dependent on operator experience; rather, it can reflect multiple factors, including nodule char-

Table I. Distribution of Cytological Categories in Thyroid FNA Diagnoses.

ICCRTC	2023		2024		2025	
	N = 1042	%	N = 990	%	N = 949	%
TIR1*	59	5.7	121	12.2	62	6.5
TIR1C	2	0.2	34	3.4	18	1.9
TIR2	850	81.6	689	69.6	704	74.2
TIR3A	69	6.6	104	10.5	116	12.2
TIR3B	28	2.7	18	1.8	18	1.9
TIR4	11	1	6	0.6	9	1
TIR5	23	2.2	18	1.8	22	2.3

ICCRTC: The Italian Consensus for the Classification and Reporting of Thyroid Cytology system.

*TIR1C excluded.

acteristics (cystic, solid, fibrotic, or calcified), small nodule size (especially < 1 cm, which may suggest suboptimal selection for FNA), and technical aspects of the procedure [5]. In our case, this finding is mainly attributable to cytopathologist turnover and the training of new staff during the first months of the 2024, which likely contributed to this transient increase.

Our team comprises a radiologist, who performs ultrasound (US) guidance; a pathologist, who performs the fine-needle aspiration, prepares the slides, and is responsible for their interpretation; and nursing staff. In collaboration with the Endocrinology and Internal Medicine Units, a weekly dedicated session of six rapid diagnostic procedures is scheduled for patients with a high suspicion of malignancy. Laboratory tests, thyroid US, and FNA are performed in the morning. A few hours later, in the early afternoon, patients are seen by an endocrinologist and receive an integrated diagnosis based on cytological report and laboratory test results, enabling the clinician to provide a personalized therapeutic plan in the same day of the diagnostic assessment.

This integrated approach has several strengths: it improves specimen adequacy, diagnostic accuracy, specificity, and negative predictive value (as recognized in the literature) [6], reduces the need for repeat procedures, and allows rapid integration of diagnostic procedures and clinical decision-making in selected high-risk patients, reducing waiting times. It could be considered a patient-centered model[7], which may contribute to a higher perceived quality of the healthcare system among patients. In our experience, the direct involvement of the cytopathologist in the sampling procedure, in close interaction with the radiologist, provides added value beyond rapid on-site evaluation (ROSE) alone. The cytopathologist-performer can more precisely target the most suspicious areas (e.g., solid rather than cystic components), improving sample representativeness and allowing a more tailored and dynamic procedure. In addition, interpretation is more immediate and potentially more accurate due to direct correlation with the sampled area as the cytopathologist is aware of whether the needle is accurately positioned within the suspicious region, particularly in small or heterogeneous nodules. Moreover, the presence of the cytopathologist in the outpatient setting allows real-time access to relevant clinical and imaging information (e.g., single vs multiple nodules, chronic thyroiditis, thyroid function), which is often limited but may support cytological interpretation. Last but not least, pathology residents of Verona University directly participate to the cytopathology service activities, making this model a powerful tool for teaching purposes and laying the foundations for the future interventional cytopathologist [8].

Within this perspective, the concept of *interventional pathology* – which has been discussed for years [7,9] – deserves renewed attention [10]. Despite its recognized potential, this field that includes but is not limited to FNA still lacks structured academic pathways and formalized training programs. A comprehensive discussion of interventional pathology is beyond the scope of this contribution; however, we believe that our integrated model could help in attracting new generations to the field. It is known that many countries are currently facing a decline in interest toward careers in Pathology, and Italy is not excluded from this trend. In this context, models in which pathologists have a direct interaction with patients and multidisciplinary teams may contribute to improving recruitment. The role of the "interventional pathologist" offers a more dynamic and clinically integrated professional identity, moving beyond the traditional perception of the pathologist as a predominantly laboratory-based specialist.

In conclusion, we believe that sharing diverse institutional experiences may contribute to a more comprehensive understanding of best practices not only in thyroid cytopathology but broadly to Pathology itself, with potential benefits for patients and the education of future pathologists. We commend the authors [1,2] for

their valuable contribution to the field.

Conflicts of interest statement

The authors declare no conflicts of interest.

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Authors' contributions

Conceptualization: V.M. and A.N.; writing-original draft preparation: V.M. and A.N.; table presentation: V.M.; writing-review and editing: V.M., A.N., S.A., C.B., R.C., G.S., A.E., A.C., A.S. All authors have read and agreed to the published version of the manuscript.

Ethical consideration

The research was conducted ethically, with all study procedures being performed in accordance with the requirements of the World Medical Association's Declaration of Helsinki.

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