

Thyroglobulin washout concentration cut-off value for cervical lymph node metastases in patients after thyroidectomy due to differentiated thyroid cancer

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Abstract

Statement of the Problem: The aim of the study was to establish the cut-off value for thyroglobulin (Tg) concentration in washout fluid from fine needle aspiration biopsy (FNA-Tg) in the detection of cervical lymph node metastases of differentiated thyroid cancer (DTC). We evaluated the validity and clinical utility of fine needle aspiration biopsy cytology (FNAB-C), FNA-Tg and the combined method in detecting DTC recurrences. The study included 82 patients after total thyroidectomy, elective and in some cases also selective cervical lymphadenectomy. The majority of patients underwent also subsequent 131I ablative therapy. The patients presented with 1-6 enlarged and/or ultrasonographically suspicious cervical lymph nodes. One to four aspirates of each lymph node were taken, with a total of 297 samples. FNA-Tg of 4.34 ng/ml was established as the cut-off value detecting cervical lymph node DTC metastases for IRMA Brahms DYNO test Tg-S. FNAB-C is highly specific (91-99%), but not sensitive enough (53%-69%) to be used as a standalone method in the detection of cervical lymph node metastases. FNA-Tg is more sensitive (91%), but caution should be taken when selecting patients for surgery with FNA-Tg higher than established cut-off value but lower than serum Tg concentration.

Conclusion & Significance: To select patients for lymphadenectomy we recommend to use the combined method (FNAB-C and FNA-Tg) with sensitivity of 96% and specificity up to 97%. More than one sample should be taken with each fine needle aspiration biopsy (FNAB) to obtain a representative set of samples.

Image

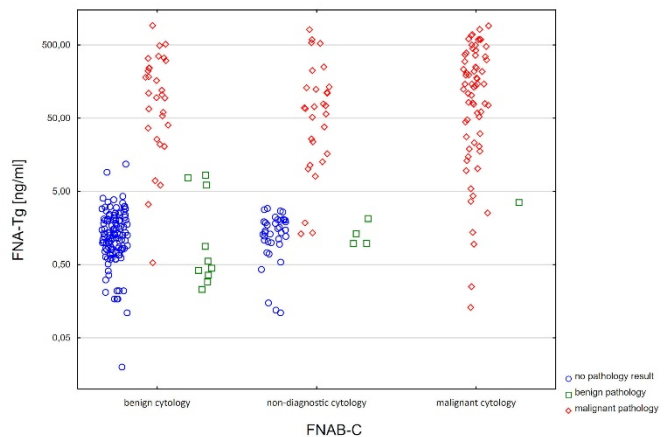


Figure 1: Distribution of measured FNA-Tg values in diagnostic groups: benign cytology, non-diagnostic cytology, malignant cytology.

Recent Publications

1. Wołowiec-Korecka E (2024) Carburising and Nitriding of Iron Alloys, Springer.
2. Wołowiec-Korecka E (2023) Case hardening development review (2001-2020). Archives of Materials Science and Engineering 120/2:70-85. DOI:10.5604/01.3001.0053.6922
3. Wołowiec-Korecka E, Michalski J, Januszewicz B (2023) The stability of the layer nitrided in the low-pressure nitriding process (LPN). Coatings 13:257-268. DOI:10.3390/coatings13020257
4. Klimek L, Wołowiec-Korecka E, Czepułkowska-Pawlak W, Kula Z (2023) Quality of the ceramic and Ni-Cr alloy joint after Al₂O₃ abrasive blasting. Materials 16:3800. DOI:10.3390/ma16103800
5. Stachurski W, Sawicki J, Zgórnjak P, Wołowiec-Korecka E (2023) Impact of single-piece flow thermo-chemical treatment process conditions on hole quenching deformation. Archives of Materials Science and Engineering 121/1:18-24. DOI:10.5604/01.3001.0053.7476

Photograph



Biography

Assoc. Prof. Emilia Wołowiec-Korecka was born in Lodz, Poland. She studied computer science at the Lodz University of Technology, with a specialization in artificial intelligence and software engineering. In 2005, she received an M.Sc. degree in computer science, followed by Ph.D. and D.Sc. degrees in materials science and engineering. Since 2018, she has worked as a professor at the Lodz University of Technology, Poland. She is an expert in the material engineering field, especially thermo-chemical treatment. Her research interests include surface engineering, numerical algorithms for controlling heat treatment processes, software engineering and statistical analyses. She is recognized as the (co-)author of over 100 publications, patents, and applications. She has received a number of honours for her scientific work.

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