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The possibility of employing micronucleus test for the diagnosis of doubt cases in screening for the determination of breast cancer

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Introduction & Objectives: The aim of this study is to check the possibility to use the test with micronuclei (MN) in saliva for doubt cases (BI-RADS 3) detected in screening for breast cancer.

Material & Methods: It has been an executed bibliographic search in free text and with the cross referring on PubMed for articles published from Jan 1, 2000 to Dec 31, 2016, for the keywords: "micronuclei in exfoliated buccal cells in breast cancer" and also executed preliminary tests on seven patients and, BI-RADS 3 and BI-RADS 2 to evaluate the difference in the score concerning the presence of micronuclei in the two groups. For the small number of patients, these results are not statistically reliable but can still sufficiently show a very indicative trend.

Results: The bibliographic references show as the micronuclei scoring can be used as a biomarker on fine needle aspiration cytology smears of breast cancer, while the tests in peripheral blood lymphocytes have known reproducibility problem. Also, the bibliography show in breast cancer, an increase of MN in exfoliated buccal mucosa. Five studies show that the buccal cells in breast cancer and the amount of MN are significantly higher compared to benign cases as in six studies for the detection of micronuclei in needle aspiration in ductal carcinoma. Contrasting results are for MN in peripheral blood lymphocytes. On concerning our preliminary test in buccal cells, three patients of the group BI-RADS 3 show to have micronuclei, while no positive findings were found in BI-RADS 2.

Conclusions: May be interesting to apply the MN scoring in cases of doubt, according to functional BI-RADS category 3 (probably benign), and which are sent to a successive control.

Recent Publications

1. Bolognesi C, Bruzzi P, Gismondi V, Volpi S, Viassolo V, Pedemonte S and Varesco L (2014) Clinical application of micronucleus test: a case-control study on the prediction of breast cancer risk/susceptibility. PLoS One 9(11):e112354.
2. Dey P, Samanta S and Susheilia S (2012) Micronucleus assay in buccal smears of breast carcinoma patients. Diagn. Cytopathol. 40(8):664-6.
3. Flores Garcia A, et al. (2014) Micronuclei and other nuclear anomalies in exfoliated buccal mucosa cells of Mexican women with breast cancer. J BUON. 19(4):895-9.
4. Goel S, Bhatia A, Dey P (2013) Spontaneously occurring micronuclei in infiltrating ductal carcinoma of breast: a potential biomarker for aggressive phenotype detection? Diagn Cytopathol. 41(4):296-302.
5. Hemalatha A, Suresh T N and Harendra Kumar M L (2014) Micronuclei in breast aspirates. Is scoring them helpful? J Cancer Res Ther. 10(2):309-11.

Biography

Menicagli Roberto has completed his PhD from Milan University and Post-doctoral studies in Biochemistry and Molecular Genetics, at the Faculty of Biology at Milan University, where he has been a Contract Professor for two years. He is the Director of Roma Biomed Research Lab, Italy a Private Medical Service Organization. He has published more than 20 papers in reputed journals, some also with impact factor; he is also the principal author of 4 international patents in the field of environment and of the biomarkers applications. He has been serving as an Editorial Board Member of two magazines concerning the medical sciences.

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