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Looking for the perfect test (if it exists) for the assessment of chromosome alterations in bladder cancer: Urovysion test and microarray-based CGH analysis

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Transitional cell carcinoma (TCC) comprises the majority of bladder cancers (more than 90%). TCC is grouped in high- or low- grade (HG or LG), noninvasive (NI) or invasive (IN) lesions. The biological difference between these groups probably reflects underlying genetic heterogeneity leading to specific pathways of tumor development and progression. 22 TCCs (9 HGIN, 3 HGNI, 1 LGIN, 9LGNI) were tested by UroVysion® Bladder Cancer Kit, a fluorescence in situ hybridization (FISH) assay designed to detect aneuploidy for chromosomes 3, 7, 17 and loss of the 9p21 locus; the test was performed in duplicate on Formalin Fixed Paraffin Embedded (FFPE) samples and on freshly isolated nuclei (FIN) in order to evaluate the performance of this targeted test in two different materials from the same tumor. At least 100 cells were scored and the signals were divided in loss, disomy and gain (number of signals/cell < 2; = 2; ≥ 3). Statistical analysis was conducted by means of a poisson model. The data generated from FIN and from FFPE were generally comparable. However in HGNI significant difference was evidenced, except for chromosome 3; conversely in HGIN significant difference emerged only for this signal. A second level of comparison was applied on 10 TCC (6 HGIN, 1 HGNI, 3 LGNI) between data derived from array comparative genomic hybridization (array-CGH) and UroVysion analysis on different areas of matched FFPE tissues. Our results reflect the high intra-tumor heterogeneity and also showed some shared aberrations that could be interesting for the therapy with monoclonal antibodies.

Biography

Graduated in Biological Science in 1999, she has a Specialization in Medical Genetics in 2004 and a PhD in experimental Pathology and Neuropathology in 2007. She is scientific researcher c/o Department of Neurosciences and Biomedical Technologies; Assistant Professor of Genetic Pathology, Genetic Markers and Genetic of Riproduction c/o University of Milano Bicocca. Her main interests are pathogenetic mechanisms of genetic syndromic diseases associated with mental retardation and/or congenital heart defects. From 2005 she focused her attention on Mesenchymal Stem Cells (MSCs) and Cancer Stem Cells from Bladder Cancer and Glioblastoma Multiforme. She has published 15 papers, especially the last two concerning the isolation and characterization of the putative bladder cancer stem cell are very cited. She is also a referee for the evaluation of projects for the Italian Ministry of Research and University.