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Biomarkers of progression in HPV-related cancers

Virtually all cases of cervical cancer are associated with persistent infection with a restricted set of high-risk human papilloma viruses (HPV). The majority of HPV infections induces low grade squamous intra-epithelial lesions (L-SIL) in more than 90% of cases spontaneously regress and in about 10% eventually progress to high grade lesions (H-SIL) and even less frequently evolve to invasive cancer. Tumor progression is characterized by: Increased expression of viral *E6* gene and *E6*-dependent degradation of p53 and increased expression of *E7*, known to bind and inactivate pRb and; integration of viral DNA into host genome with the consequent disruption of *E2* viral gene. Molecular markers able to identify viral infections associated with progressing cervical neoplasia are strongly needed for cervical cancer screening and triage. We have recently performed the expression profile analysis of p53-related genes in HPV16-positive carcinomas along with autologous non-tumor tissue and identified significant differences in the expression levels of genes involved in regulation of apoptosis, cell cycle, proliferation and DNA repair pathways. In particular, *BRCA1*, *CDKN2A* (p16), *CASP2* and *TNFRSF10B* genes were significantly up-regulated ($p < 0.05$) in cancer lesions. Validation of these candidate biomarkers is currently in progress on a larger number of cases, including different grades of HPV-related neoplastic lesion (CIN1-3 and invasive cervical cancer). Such studies will contribute to the development of new tools for the identification of premalignant lesions at high risk of progression to invasive cervical carcinoma.

Biography

Franco Maria Buonaguro has completed his MD from Federico II University in Naples and Post-doctoral studies from Argonne Natl Lab, Chicago, IL and FHCR, Seattle, WA-USA. He is the Director of Molecular Biology & Viral Oncology Division at the INT of Naples-IT. He has published more than 150 papers in indexed journals and has been serving as Editorial Board Member of high-impact journals. He is the Founder and Editor in Chief of Infectious Agents and Cancer.

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