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Detection of JC Virus DNA and T-Ag Expression in a Subpopulation of Tunisian Colorectal Carcinomas

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Abstract : Background & aims: Colorectal cancer (CRC) is one of the most common malignancies throughout the world. Several risk factors, both genetic and environmental, including viral infections, have been linked to colorectal carcinogenesis. A few studies report the detection of human polyomavirus JC (JCV) DNA and transformation antigen (T-Ag) in a fraction of the colorectal tumors studied and suggest an association of this virus with CRC. In order to investigate whether such an association of JCV with CRC will hold in a different epidemiological setting, we looked for the presence of JCV DNA and T-Ag expression in a group of Tunisian CRC patients. Methods: Fresh colorectal mucosa biopsies were obtained from 17 healthy volunteers and from both colorectal tumors and adjacent normal tissues of 47 CRC patients. DNA was extracted from fresh biopsies or from formalin-fixed, paraffin-embedded tissue sections using the Invitrogen Purelink Genomic DNA mini Kit. A simple PCR and a nested PCR were used to amplify a region of the T-Ag gene. The obtained PCR products revealed a 154 bp and a 98 bp bands, respectively. Specificity was confirmed by sequencing of the PCR products. T-Ag expression was determined by immunohistochemical staining using a mouse monoclonal antibody (clone PAb416) directed against SV40 T-Ag that cross reacts with JCV T-Ag. Results: JCV DNA was found in 12 (25%) and 22 (46%) of the CRC tumors by simple PCR and by nested PCR, respectively. All paired adjacent normal mucosa biopsies were negative for viral DNA. Sequencing of the DNA amplicons obtained confirmed the authenticity of T-Ag sequences. Immunohistochemical staining showed nuclear T-Ag expression in all 22 JCV DNA- positive samples and in 3 additional tumor samples which appeared DNA-negative by PCR. Conclusions: These results suggest an association of JCV with a subpopulation of Tunisian colorectal tumors.

Keywords : colorectal cancer, immunohistochemistry, Polyomavirus JC, PCR
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