

Is the Human Papillomavirus infection possible in colorectal carcinomas?

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Abstract

Introduction: Human Papilloma Virus (HPV) is a heterogeneous group of naked viruses that belong to the Papovaviridae family. They are usually known as wart viruses and people mostly associate them to genital condyloma. At present, 216 types of HPV are recognized. They can infect basal layer epithelial cells, replicate and express themselves in close relation with the epithelial differentiation program(1). Epithelial cancer caused by sustained HPV infection is a process that, after a long period of time, becomes pre-malignant and is known as intraepithelial neoplasm in which infected cells undergo phenotypical changes. At the end, the latter changes become carcinoma in situ. HPVs are classified according to their oncogenicity as those of high and of low risk (1-5). An incidence of around 32% is reported in colon adenomas and 43% in colorectal adenocarcinomas (6-8). In Cuba, colon cancer occupies the 3rd place among malignant neoplasms. The aim of this work was to diagnose HPV from colorectal carcinoma.

Materials and methods: Cytologic smears and tumoral epithelia of 20 colorectal carcinomas were studied by means of histology, cytology, polymerase chain reaction (PCR) and electron microscopy. The patients were from the Gastroenterology and Oncology Institutes of Havana.

Results: The histology of the 20 cases under study was the following: 11 adenocarcinomas, 2 well-differentiated adenocarcinomas, 2 moderately differentiated adenocarcinomas, 3 poorly differentiated adenocarcinomas, 1 well differentiated papillar adenocarcinoma and a sigmoidal infiltration of an anal channel epidermoid carcinoma. Nineteen cytological tests were positive for malignant glandular cells. The sigmoid infiltration was positive for squamous cells, and coilocytes were observed (Figure 1A). At the optical microscope, no characteristic morphological changes were found in the glandular cells infected by HPV in adenocarcinomas (Figures 1B-C). PCR was applied in only 9 cases: 3 adenocarcinomas (transverse colon, hepatic angle, and sigmoid). The sigmoid infiltration was HPV-16 PCR+. At the electronic microscope the positive PCR adenocarcinomas showed HPV particles in the enterocyte nucleus, cytoplasm and apical mucus (Figure 1D). Electron microscope images of the sigmoid tumoral infiltration were similar to those reported on cervix epidermoid carcinoma associated to HPV (Figure 1E). The sigmoid tumoral infiltration was HPV-16 positive by PCR and by immunohistochemical techniques (Figure 1F). **Conclusions:** These preliminary results evidence that these colorectal cancer samples were infected by HPV.

References

- (1) Llop Hernández A. Microbiología y Parasitología Médicas, 2001. Ciudad Habana. Cuba.
- (2) Zur Hausen H. Papillomaviruses in human cancers. Proc Assoc Am Physicians 1999; 111 (6): 581-7.

- (3) Hanna L. Human papillomavirus and anal neoplasia Bull Exp Treat AIDS 1997; 37: 1-13.
- (4) Stanbridge CM. J Clin Pathol 1981; 34: 524.
- (5) Mandado Pérez S. Rev Mex. de Patología Clínica. 2003; vol 50, No1.
- (6) Cheng JY. Arch Surg 1995; 130: 73-6.
- (7) Mandado Pérez S. Rev Panamericana de Infectología, 2004;6(3):24-31
- (8) Mc Gregor B. The American Journal of Surgery 1993; 166: 738-42.

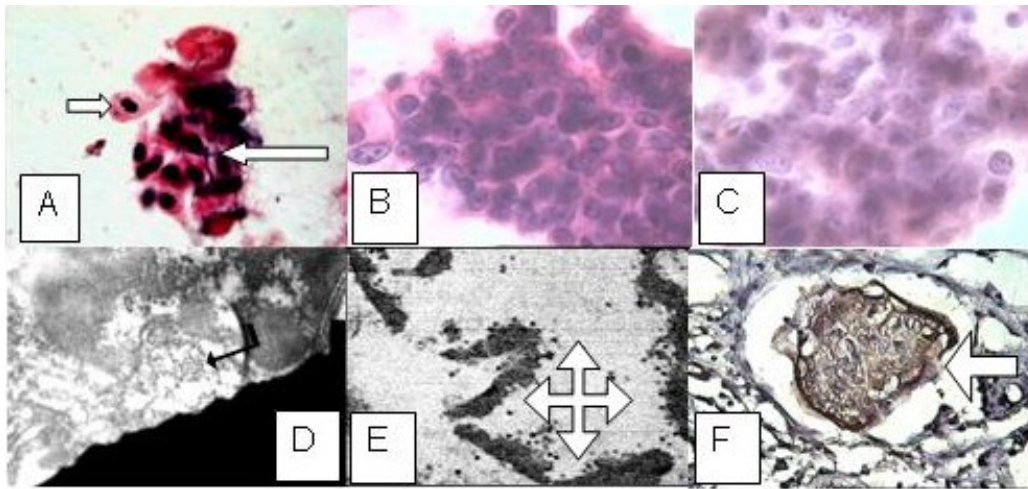


Figure 1.

A: Sigmoid infiltration cytological smear. Large arrow points to a koilocyte. Small arrow points to an atypical mitosis. Hematoxylin-eosin, x400. B and C: Colon adenocarcinomas cytological smears. B: PCR negative, C: PCR positive. Hematoxylin-Eosin, x400. D: PCR positive for HPV Colon adenocarcinoma. Arrow points to a viral particle. Transmission Electron Microscopy (TEM), x40,000. E: Anal canal sigmoid infiltration of an epidermoid carcinoma. Arrows point to viral particles. TEM, x40,000. F: Anal canal sigmoid infiltration of an epidermoid carcinoma, HPV positivity demonstrated by immunohistochemistry (monoclonal antibody IOR-HPV-16) (x 200).