

Discussion

Despite the rapid advance in the understanding of molecular pathways underlying human colorectal carcinogenesis, the causes that initiate dysregulation of the pathways remain largely unknown. Human cytomegalovirus (HCMV) has been implicated as a potential pathogenic agent⁽¹²⁾.

In the present study we examined 32 colorectal adenocarcinomas among which five were positive for HCMV early protein which could be supported by many studies and evidences showing that many viral genes and proteins are carcinogenic or participate in the process of carcinogenesis (4-10). One of the viral morphologic transforming regions, mtrII, encodes a 79 amino acid protein that is capable of binding to tumor suppressor p53 to inhibit p53-activated transcription⁽¹³⁾. In addition, it was recently reported that the CMV UL82 gene product pp71 stimulates cell cycle progression by inducing protein degradation of another important tumor suppressor Rb and its family members p107 and p130⁽¹⁴⁻¹⁶⁾. Taken together, these experimental observations strongly suggest CMV to be a potential carcinogenic agent.

Despite the accumulation of in vitro evidence, the role of CMV infection in the development of human cancers has not been established. This is in contrast with other members of the herpes virus family, such as Epstein-Barr virus and human herpes virus 8, that are linked convincingly to several human malignant neoplasms⁽¹⁷⁻¹⁸⁾. The association of CMV with human cancers has been studied in the uterine cervix, prostate, and colorectum, but the data have been conflicting and inconclusive^(5, 12, 19).

CMV infects a wide range of human cells⁽²⁰⁾, including colonic epithelial cells that give rise to

adenomas and adenocarcinomas. The possible association of CMV with human colorectal adenocarcinomas was reported first in 1978 by Huang and Roche⁽²¹⁾, who detected CMV DNA in 4 of 7 colonic adenocarcinomas by membrane complementary RNA-DNA hybridization. It is interesting that CMV DNA also was detected in 1 of 2 cases of familial adenomatous polyposis but not in normal colonic tissues from the same patients or control cases of Crohn disease^(22, 23).

In conclusion, HCMV might play a role in the process of colorectal carcinogenesis because it is evidenced now that some of the CMV proteins might have mutagenic potential, which might be expressed only transiently in host cells to induce mutations in cellular genes leading to oncogenic transformation⁽²⁴⁾.

References

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