

Investigation into the controversial association of *Streptococcus gallolyticus* with colorectal cancer and adenoma.

ABSTRACT

BACKGROUND:The seroprevalence of IgG antibodies of *Streptococcus gallolyticus* subspecies *gallolyticus*, CIP 105428, was evaluated to investigate the controversial association of *S. gallolyticus* with colorectal carcinoma and adenoma in attempt to investigate the nature of such association if any, by exploring the mRNA expression of NF-kappaB and IL-8. Moreover, the serological behavior of *S. gallolyticus* IgG antibodies was compared to that of an indicator bacterium of bowel, *Bacteroides fragilis*. **METHODS:**ELISA was used to measure IgG antibodies of *S. gallolyticus* and *B. fragilis* in sera of 50 colorectal cancer, 14 colorectal adenoma patients, 30 age- and sex- matched apparently healthy volunteers (HV) and 30 age- and sex- matched colonoscopically-proven tumor-free control subjects. NF-kappaB and IL-8 mRNA expression was evaluated in tumorous and non-tumorous tissue sections of carcinoma and adenoma patients in comparison with that of control subjects by using in situ hybridization assay. **RESULTS:**Colorectal cancer and adenoma patients were associated with higher levels of serum *S. gallolyticus* IgG antibodies in comparison with HV and control subjects ($P < 0.05$) while no similar association was found with serum IgG antibodies of *B. fragilis* ($P > 0.05$). ELISA cutoff value for the seropositivity of *S. gallolyticus* IgG was calculated from tumor-free control group. The expression of NF-kappaB mRNA was higher in tumorous than non-tumorous tissue sections of adenoma and carcinoma, higher in carcinoma/adenoma sections than in control subjects, higher in tumorous sections of carcinoma than in adenoma patients, and higher in *S. gallolyticus* IgG seropositive than in seronegative groups in both tumorous and non-tumorous sections ($P < 0.05$). IL-8 mRNA expression in tumorous sections of adenoma and carcinoma was higher than in non-tumorous sections, higher in carcinoma/adenoma than in control subjects, and higher in *S. gallolyticus* IgG seropositive than in seronegative groups in tumorous rather than non-tumorous sections ($P < 0.05$). **CONCLUSION:***S. gallolyticus* most likely plays an essential role in the oncogenic progression of normal colorectal mucosa to adenoma and to CRC. This promoting/propagating role of *S. gallolyticus* might take place by utilizing certain inflammatory, anti-apoptotic, and angiogenic factors of transformation including NF-kappaB and IL-8.

Keyword: Colorectal cancer; Adenoma; *Staphylococcus gallacticus*.