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Expression of CASK Antibody in Non-Mucionus Colorectal Adenocarcinoma and Its Relation to Clinicopathological Prognostic Factors

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Abstract : Calcium/calmodulin-dependent serine protein kinase (CASK) belongs to the membrane-associated guanylate kinase (MAGUK) family and has been proposed as a mediator of cell-cell adhesion and proliferation, which can contribute to tumorogenesis. CASK has been linked as a good prognostic factor with some tumor subtypes, while considered as a poor prognostic marker in others. To our knowledge, no sufficient evidence of CASK role in colorectal cancer is available. The aim of this study is to evaluate the expression of Calcium/calmodulin-dependent serine protein kinase (CASK) in non-mucinous colorectal adenocarcinoma and adenomatous polyps as precursor lesions and assess its prognostic significance. The study included 42 cases of conventional colorectal adenocarcinoma and 15 biopsies of adenomatous polyps with variable degrees of dysplasia. They were reviewed for clinicopathological prognostic factors and stained by CASK; mouse, monoclonal antibody using heat-induced antigen retrieval immunohistochemical techniques. The results showed that CASK protein was significantly overexpressed ($p < 0.05$) in CRC compared with adenoma samples. The CASK protein was overexpressed in the majority of CRC samples with 85.7% of cases showing moderate to strong expression, while 46.7% of adenomas were positive. CASK overexpression was significantly correlated with both TNM stage and grade of differentiation ($p < 0.05$). There was a significantly higher expression in tumor samples with early stages (I/II) rather than advanced stage (III/IV) and with low grade (59.5%) rather than high grade (40.5%). Another interesting finding was found among the adenomas group, where the stronger intensity of staining was observed in samples with high grade dysplasia (33.3%) than those of lower grades (13.3%). In conclusion, this study shows that there is significant overexpression of CASK protein in CRC as well as in adenomas with high grade dysplasia. This indicates that CASK is involved in the process of carcinogenesis and functions as a potential trigger of the adenoma-carcinoma cascade. CASK was significantly overexpressed in early stage and low-grade tumors rather than tumors with advanced stage and higher histological grades. This suggests that CASK protein is a good prognostic factor. We suggest that CASK affects CRC in two different ways derived from its physiology. CASK as part of MAGUK family can stimulate proliferation and through its cell membrane localization and as a mediator of cell-cell adhesion might contribute in tumor confinement and localization.

Keywords : CASK, colorectal cancer, overexpression, prognosis
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