**BACKGROUND**

- The mucus layer coating the gastrointestinal tract is the front line of innate host defense.
- MUC2 is the major secretory mucin synthesized and secreted by goblet cells, whereas goblet and absorptive cells express membrane-bound mucins such as MUC1 in the apical membrane.
- MUC1 plays a role in tumorigenesis through changes in intracellular signaling, adhesion and migration and by increasing resistance to apoptosis.
- MUC2 gene product either functions as a tumor suppressor or contributes to the function of a tumor suppressor.

**AIM OF THE WORK**

- To investigate the expression profile of MUC1 and MUC2 in normal, inflamed and neoplastic lesions of the colon.
- To analyze the immunohistochemical expression of MUC1 and MUC2 and their relationship to the site, histological differentiation and stage of colorectal carcinoma.

**PATIENTS AND METHODS**

- **Group I:** Thirty specimens of surgically resected colorectal cancer.
- **Group II:** Fifteen specimens of endoscopically resected colorectal adenoma.
- **Group III:** Fifteen endoscopic biopsy specimens of ulcerative colitis.
- Diagnosis of ulcerative colitis was based on clinical symptoms, colonoscopy and histological findings.
- **Group IV:** Ten control colorectal specimens collected from the free resection margins of colectomy specimens.
- All tissue specimens were subjected to MUC1 and MUC2 immunohistochemical staining using monoclonal antibodies.

**RESULTS**

- The positive expression rates of MUC1 and MUC2 in colorectal carcinoma were 78.7% and 60% respectively.
- MUC1 immunoreactivity was detected in 33.3% of colorectal adenomas whereas MUC2 expression was observed in 93.3% of cases.
- MUC2 expression was noted in all cases of ulcerative colitis(100%), while MUC1 was expressed in 40% of cases.
- The expression rates of MUC1 and MUC2 in control cases were zero and 100% respectively.
- MUC1 expression was significantly higher in carcinomas as compared with UC and adenomas, while MUC2 expression was significantly lower in carcinomas as compared with UC and adenomas.
- MUC1 expression was significantly higher in colorectal adenocarcinomas, whereas MUC2 was significantly expressed in mucinous carcinomas (P<0.05).
- No significant correlation was found between expression of MUC1 or MUC2 and histological grade (P>0.05).
- High significant association was found between advanced tumor stage and MUC1 expression (P<0.05), while MUC2 expression was significantly correlated with lower tumor stages.
- No significant correlation was found between expression of MUC1 or MUC2 and tumor location (P>0.05).

**CONCLUSION**

- Up-regulation of MUC1 and down-regulation of MUC2 expression could be involved in carcinogenesis and progression in colorectal tumors and reflect the prognosis to a certain extent.
- Further studies of mucin changes in cancer and inflammation are warranted not only as diagnostic and prognostic markers but also as therapeutic targets.