

Diagnostic Utility of Mucin Histochemistry in Large Intestinal Specimens ---The View Point

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Editorial

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With reference to different diagnostic utility available for the various human cancers, we would like to share our experience mainly in large intestinal specimens received in anatomy and pathology of our tertiary care center with the help of mucin histochemistry [1].

Regarding introduction of the topic, Mucin has been growing recognition in recent years that the demonstration of these substances is difficult, complex and affected by the types of mucins present. Mucins are complex carbohydrates secreted by different types of epithelial cells and glandular tissues of gastrointestinal tract with various functions like barrier, lubrication, protection, antibacterial, antiulcerogenic, viscoelastic properties [2,3].

Mucosubstances are classified into two categories mainly--Neutral mucin and Acidic mucins. Acidic further sub classified into weakly acidic and strongly acidic [2-5]. Weakly acidic mucins contain terminal carboxyl group and are called as carboxylated mucins or sialomucins. They contain chelating agents and have antibacterial and antiviral property. Strongly acidic mucins contain sulphate groups and are called as sulphomucins. They are thick, viscous and help for formation of protective coat for lubrication [4,5].

In our study, we take 30 specimens of normal intestinal mucosa from our anatomy department as controls and 30 specimens of carcinoma colon from pathology department of our hospital as cases in our observational, analytical, case control study [1]. To

compare large intestinal mucosubstances, we applied the combination of special stains that is histochemistry such as P.A.S., Alcian Blue-P.A.S., Aldehyde fuchsin-Alcian blue to simultaneously assess the proportions of various mucin types with various grades in the epithelium of large intestine in normal and carcinomatous conditions [1].

The main highlight of our study was¹ –

Special stains as PAS was used for confirmation of neutral mucins. Alcian blue pH 2.5 was used to assess acidic mucin. Further categorization of acidic mucins into sulpho and sialomucins was carried out by Alcian blue pH1 and aldehyde fuchsin. Combined stains such as AB-PAS, AF-AB, were used to differentiate between neutral and acidic mucins. The varied heterogeneity of acidic mucins was indicated by a mixture of sulpho and sialomucins [1].

We found, mixture of mucosubstances as neutral and acidic mucins with predominance of sulphomucins in the normal large intestinal epithelium. Carcinoma of colorectum showed predominantly acidic mucins with traces of neutral mucin. In the acidic mucins, predominantly sialomucins were observed as compared to normal large intestine. In colonic carcinoma, predominantly loss of sulphation was observed. Loss of sulphation in colorectal tumors may be due to reaction of tumor cells by various extracellular and intracellular factors as proposed and hypothesized by various scientists [1].

Limitations of our study¹-

- Due to recent advances in diagnostic modalities such as Immunohistochemistry/IHC as Cytokeratin i.e. CK 7,21 and various tumor markers for carcinoma colon as Carcino-embryonic antigen (CEA), CA-125, the mucin histochemistry lags behind as a diagnostic modality now a day. But it is the mucin histochemistry which has opened many doors for the researchers to study tumorogenesis at a molecular level.
- Its small sample size needs to be studied on larger scale for more meaningful and understandable etiopathology. Mucin histochemistry needs time, patience and technical skill for more powerful results. It is traditional and old one method as compared to newer fast and definite technology.
- But in spite of these hurdles, we conclude that Mucin histochemistry may provide cost-effective tool for the early diagnosis as well as prognostic indicator in histology of large intestinal lesions. It also provides important guidelines in researchers in histology.

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