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Esophageal Premalignant and Malignant Epithelial Lesions: Pathological Characteristics and Value of Cyclooxygenase-2 Expression.

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Abstract : Background Esophageal cancer is the eighth most common cancer worldwide. More than 90% of esophageal cancers are either squamous cell carcinoma or adenocarcinoma. Squamous dysplasia is a precancerous lesion for squamous cell carcinoma and Barrett's esophagus is the precancerous lesion for adenocarcinoma. Gastro-esophageal reflux disease (GERD) is the initiation factor for Barrett's esophagus. Cyclooxygenase-2 (COX-2) is a key enzyme in arachidonic metabolism. It appears to play an important role in gastrointestinal carcinogenesis. COX-2 activity may be a potential target for the prevention of cancer progression by selective COX-2 inhibitors, which decrease proliferation and increase apoptosis. Objectives To assess COX-2 expression in premalignant and malignant esophageal epitheliums changes and detect its roles in progression of these lesions. Materials and Methods We analyzed the expression of COX-2 immunohistochemically in 40 esophageal biopsies utilizing the streptavidin-biotin-peroxidase complex method on archival formalin fixed-paraffin embedded blocks. Histopathologically, 17 (42.5%) of cases were non-malignant cases which included GERD, Barrett's esophagus and squamous dysplasia. The malignant cases were 23 (57.5%) squamous cell carcinoma, adenocarcinoma and undifferentiated carcinoma. Results In non-malignant cases 7 (41.2%) out of 17 cases had high COX-2 expression. In squamous cell carcinoma 10 (83.3%) out of 12 cases had high COX-2 expression. The expression of COX-2 was high in all 9 (100%) cases of adenocarcinoma. COX-2 expression is significantly increased (P=0.005 and P=0.0001) in squamous cell carcinoma and adenocarcinoma respectively. There was a significant difference in COX-2 immunoreactivity between malignant and non-malignant lesions (P=0.0003). Conclusion COX-2 is responsible for the progression of esophageal diseases from benign to malignant. We recommend that COX-2 immunohistochemistry should be done routinely for premalignant and malignant esophageal lesions as selective COX-2 inhibitors will be helpful in the treatment. Further studies on molecular and genetic basis of COX-2 expression are needed to unmask its role and relation to progression of esophageal lesions.

Keywords : Cox-2, Esophageal adinocarcinoma, Esophageal squamous cell carcinoma, Immunohistochemistry.
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