

Immuno-histochemical significances of HER2 and Ki-67 expression in the benign and malignant lesions of gallbladder –an overview

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Background: Gall-Bladder Cancer (GBC) is a neoplasm common in certain parts of the world. The various studies reported vary due to geographical and racial differences. North India presents itself as a major center for this fatal cancer with a varied gene and protein expression profile. The pathogenesis of GBC is a much talked about phenomenon and often reports the immune-expression of Ki67 and HER-2. HER2 is an oncoprotein which is overexpressed in some malignancies including breast and GIT. HER2 and Ki67 are overexpressed in gallbladder cancer and in precancerous lesions. In our study, we have attempted to identify the immune-expression of HER-2 and Ki67 in Gall Bladder lesion (Non-neoplastic and pre-neoplastic) cases. The primary reasons for twisted results seen in the different studies can be credited to the source of antibodies used for immunohistochemistry, race of the patient cohort, and criteria used to adjudge positivity in the stained samples.

A number of recent studies have identified different immunomarkers overexpression giving rise to their oncogenic potential in non-neoplastic and preneoplastic lesions and has relation with GBC development and progression to Gall bladder carcinoma. The present study was undertaken to assess pattern and level of expression of HER2 in metaplasia, dysplasia, and different type of gallbladder lesions, which would determine its suitability as a prognostic biomarker in neoplastic transformation of gallbladder epithelium. The study was undertaken to find the expression and significance of Ki-67 index and HER2 in these lesions.

Methods: Fifty patients who underwent cholecystectomy comprised our study. Among them, 76% of specimens showing metaplasia, dysplasia, and various other lesions of Gall bladder lesions on routine histopathology were considered as cases. Chronic cholecystitis having non-metaplastic mucosa were considered as control. Immunohistochemistry (IHC) was performed for immunomarkers with HER2 and Ki-67. For HER2 interpretation ASCO/CAP guideline for breast cancer was followed. Chi-square test was used to find out the significance of HER2 expression in dysplasia/metaplasia/various other lesions of gall bladder. The ANOVA was used for determining the association of HER 2 and Ki-67 with malignant transformation.

Results: Overexpression of HER2 was observed in 63 % of high-grade dysplasia, 53% of low-grade dysplasia, and 81% of intestinal metaplasia. Ki-67 index and HER 2-scoring increased as the precursor lesions progress toward higher grading. Hence, these markers might be used as a prognostic biomarker for gallbladder carcinoma and its precursor lesions and it may be considered as indication for aimed treatment aimed for gallbladder cancer and precancerous lesions.

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Conclusions: Our study conducted is an immunohistochemical study of non-neoplastic and preneoplastic lesions of Gall bladder lesions suggesting the prognostic role of Ki67 and HER2. We found Ki67 and HER-2 as an independent prognostic factor indicating progression in its severity. In the past, the treatment for all sorts of gall bladder lesions used to be identical. However, improvements in molecular techniques, has a unique molecular signature. It is therefore important for identifying the gall-bladder lesions which may transform into malignancies later. Therefore, our study may be critical to define prospective patient subsets that may be at risk of developing gall bladder carcinoma.

Biography

Dr. Anshoo Agarwal is currently working as Professor & Chairperson at Department of Pathology, Northern Border University, Arar Kingdom of Saudi Arabia. She received her Bachelor of Medicine & Bachelor of Surgery from King George's Medical College Lucknow. Dr. Anshoo Agarwal received her M.D in Pathology from LLRM Medical College / Ch. Charan Singh University. She is an Associate professor and Discipline Coordinator in University Technology MARA, Malaysia. Dr. Anshoo Agarwal has served on many scientific memberships like Life member of Indian Association of Pathology and Microbiology, Member of International Academy Pathology, Life member of Indian Society of Hematology & Transfusion Medicine, Emirates Medical Association Pathology Society. Dr. Anshoo Agarwal has more than 80 publications. Dr. Anshoo Agarwal is editorial member of 3 journals and has many reviewed publications. Dr. Anshoo Agarwal research interests include Advance Haematology & Immunohematology, Breast cancer and Anticancer vaccines.