3rd International Conference on
EuroSciCon Digital Pathology 2018
Digital Pathology 2018
August 13-14, 2018 Madrid, Spain



Ludwig-Maximilians-Universität München
Munich

Title: RBP7 promotes malignant progression and correlates with poor prognosis in Colorectal Cancer.

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BACKGROUND: Colorectal cancer (CRC) is a common human malignancy worldwide. RBP7 is a member of the cellular retinol-binding protein (CRBP) family, required for vitamin A stability and metabolism. Some CRBP members are linked to tumor progression in cancer. However, its clinical significance and biological role in CRC remain unclear. This study aimed to investigate correlation between RBP7 expression in CRC patients and prognosis and to determine its function in CRC cells.

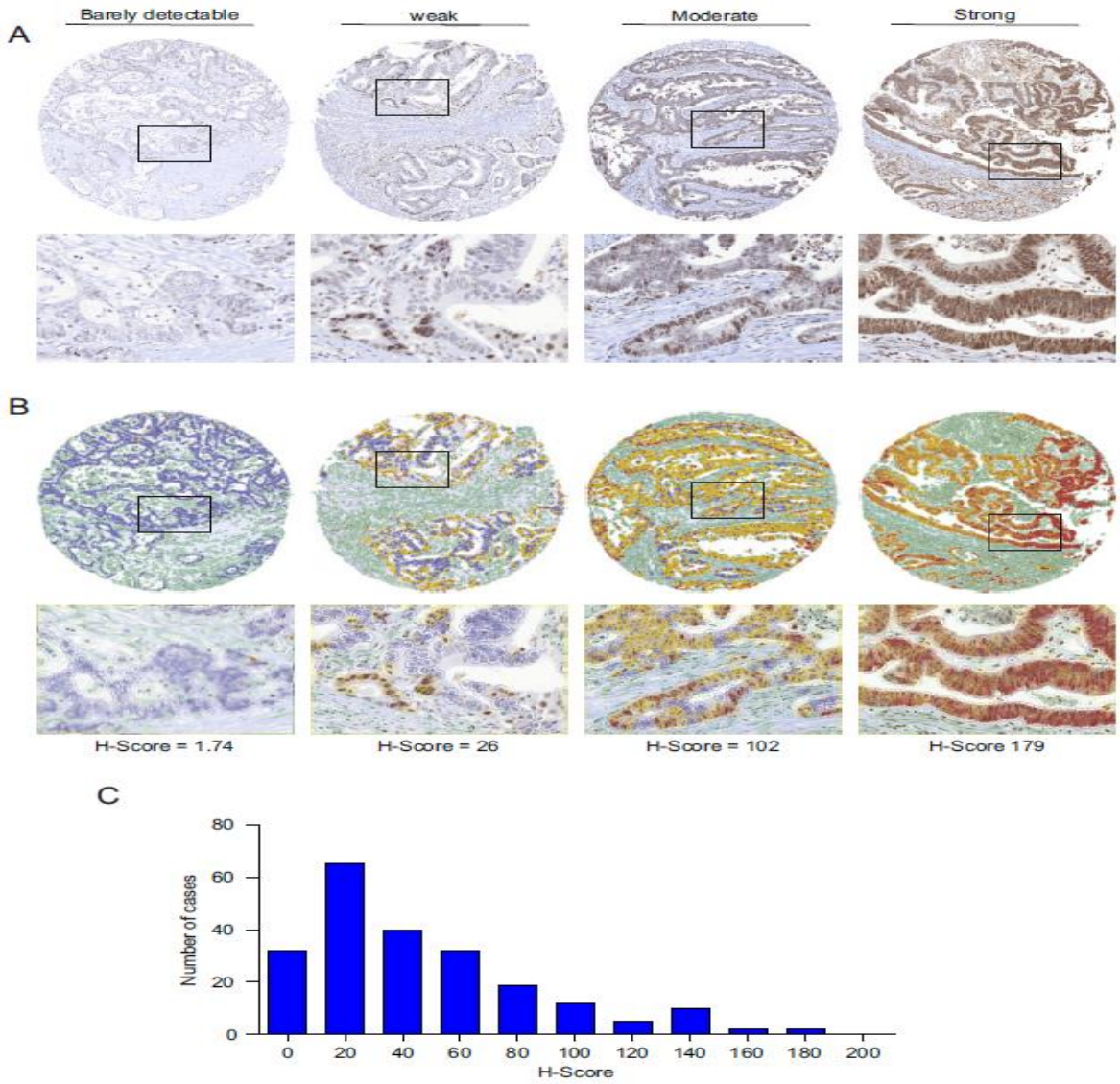
MATERIALS AND METHODS: Firstly we analyzed RBP7 expression by immunohistochemistry in a retrospective cohort of 219 CRC patients. Then, we applied a quantitative scoring approach using QuPath image analysis software for digital immunoscoring. Furthermore, functional analysis was done by establishing RBP7 overexpression and studying its effects on migration and invasion of colon cancer cell lines HCT116 and SW1222 by Transwell assays.

RESULTS: In the retrospective analysis, Kaplan-Meier statistics revealed that patients with high RBP7 expression had a significantly worse cancer specific survival (p=0.003). Furthermore, multivariate analyses suggested that RBP7 expression is a significant independent prognostic factor affecting cancer specific survival (p=0.009) with a high relative risk (HR= 2.7). Moreover; RBP7 overexpression increases migration and invasion of colon cancer cells. Lastly, RBP7 expression strongly indicated poor survival in TCGA data (p=0.00007) and Gene set enrichment analyses (GSEA) revealed that RBP7 is highly linked to epithelial mesenchymal transition (EMT) in CRC.

CONCLUSIONS: Our study highlighted a novel insight into the clinical significance of RBP7 expression in CRC patients and suggested its potential link to EMT functionally.

KEYWORDS: colorectal cancer - RBP7 - Qupath.

Figures:



A) Immunohistochemical staining for RBP7 in colon cancer. Representative tissue microarray cores of colon adenocarcinoma show barely detectable, weak, moderate or strong expression of RBP7, respectively.
B) Digital immunoscoring using QuPath image analysis software. Detected cells are color-coded according to their classification: green, non-tumor; blue, negatively staining tumor; yellow, weakly staining tumor; orange, moderately staining tumor; red, strongly staining tumor. Representative tissue microarray cores are arranged from low to high H scores.
C) Histogram showing the disribution of H-score in CRC patients cohort .

Biography

Manal Elmasry is a PhD student in pathological institute, Ludwig Maximilian University of Munich, Germany. She is an assistant lecturer of pathology in Pathology Department, Faculty of Medicine, Mansoura University, Egypt. She has a scholarship from German Academic Exchange service(DAAD) to get a doctoral degree in Pathology from Germany.

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Category: Poster presentation
Session name:Track4: Digital Image Analysis
Research interest: Digital pathology- transitional cancer research- Cancer colon