CD8&CD163 EXPRESSION IN TUMOR MICROENVIRONMENT OF RENAL CELL CARCINOMA AND THEIR RELATION TO PD-L1 EXPRESSION

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Introduction

Renal cell carcinoma (RCC) is the sixth most common cancer in men and the tenth most common cancer in women. RCC is the thirteenth leading cause of cancer-related mortality worldwide. There are many significant prognostic determinants that are important to the management of RCC. One of the them are tumor microenvironment associated biomarkers. Tumor microenvironment (TME) exhibits either tumor suppressive or tumor-promoting effects. Immune cells are important constituents of the TME. CD8 tumor infiltrating lymphocytes are related to prognosis of many tumors. Tumor associated macrophages (TAMs) are important immune populations that are usually of the M2 type which are related to tumor invasion, growth and metastasis. PD-L1 is one of the immune checkpoints that inhibits T-cell function leading to tumor growth and proliferation. PD-L1 can be used as predictive marker for tumor aggressiveness.

Aim of the work

The current study was carried out to study the immuno-histochemical (IHC) expression of CD8, CD163 and PD-L1 in clear cell renal cell carcinoma and to correlate their expression with different clinico-pathologic parameters of the tumor.

Material

The current study comprised 50 retrospective cases of clear cell renal cell carcinoma, obtained from the archives of the Pathology Department, Faculty of Medicine, Alexandria University, from January 2015 till December 2021.

Subjects and Methods

The current study entailed clinical data collection, pathological assessment as regards H&E staining, and IHC staining. The latter was conducted using the automated Ventana staining according to the instruction manual. IHC was assessed as regards staining intensity and distribution percent then combined scores were assigned. Results were then tabulated, and statistically analyzed in relation to other clinicopathological parameters of the tumor.

Results

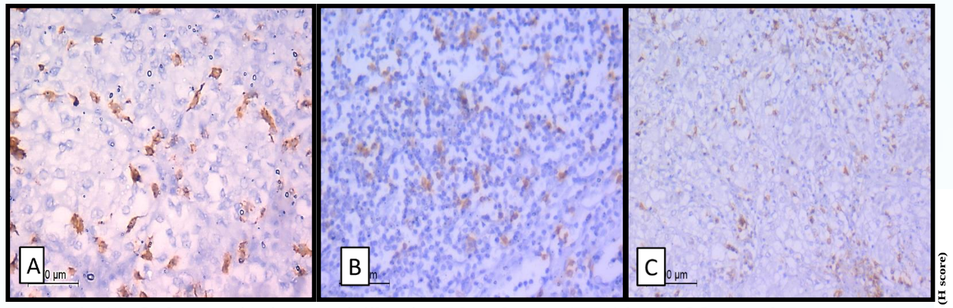

Fig. (1): CD8 expression in tumor infiltrating T-lymphocytes (TILs) in cc RCC cases .A. Intense membranous staining B. Moderate membranous staining C. Weak membranous staining

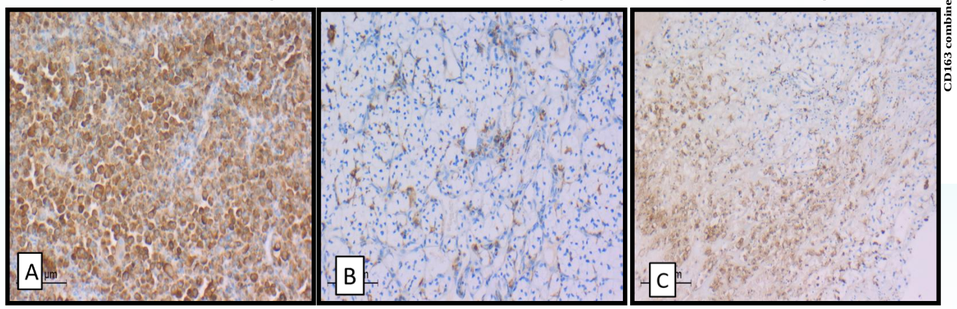

Fig. (2): CD163 expression in tumor associated macrophages (TAMs) in ccRCC cases .A. Intense membranous and cytoplasmic staining B. Moderate membranous staining. C. Weak membranous staining.

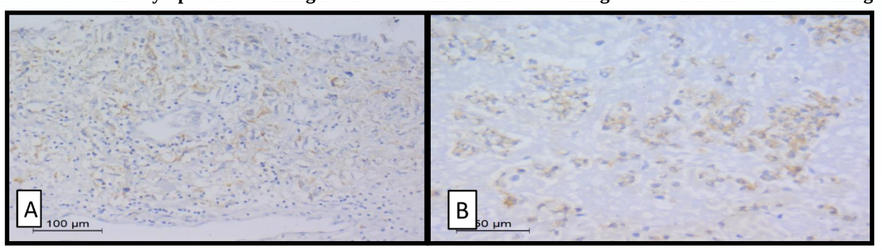

Fig. (3): PD-L1 expression in ccRCC cases .A .positive membranous staining in tumor cells B. membranous and cytoplasmic staining in inflammatory cells.

CCRCC cases with positive expression of PD-L1 were significantly associated with tumor aggressive phenotype characteristics such as higher nuclear grade and more advanced T stage. A statistical significance was found between CD163 expression and tumor necrosis (p=0.01) as well as tumor size (p=0.001). There was no relation between CD8 expression and any of the clinicopathological markers studied including CD136 and PD-L1 expressions.

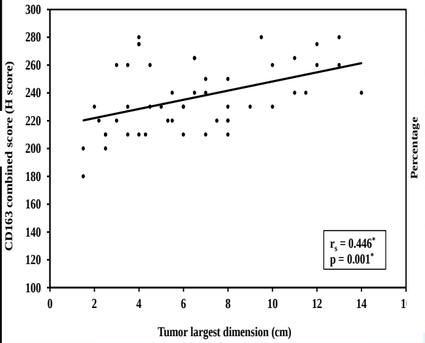

Fig. (4): correlation between CD163 expression and ccRCC tumor size.

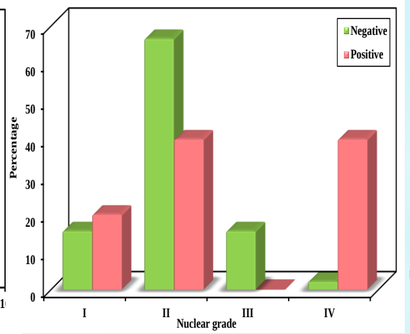

Fig. (5):Relation between PD-L1 expression and ccRCC nuclear grade.

Conclusion

PD-L1expression could be used as predictive marker of ccRCC aggressive phenotype.

Increased CD163 expression is associated with increased tumor size, advanced T stage and higher nuclear grade.

PD-L1 is promising ccRCC prognostic marker, however it needs further evaluation on a larger number of cases with more diverse study sample .