PROGNOSTIC VALUE OF CD1α TUMOR-INFILTRATING DENDRITIC CELLS IN NON-MUSCLE INVASIVE BLADDER CANCER

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Background: Bladder tumors are 5th in incidence in Canada and occur as non-muscle-invasive bladder cancer (NMIBC) in 70% of cases. After transurethral resection they recur in 60% of cases and progress to muscle-invasive bladder cancer in 20%. It is essential to detect tumors most likely to recur or to progress to adjust treatment accordingly. Characterizing tumor-infiltrating immune cells is proposed as new way to classify cancers. Previous studies showed that tumor-infiltrating dendritic cells (TIDCs) were significantly associated to prognosis in NMIBC. We analysed TIDCs in bladder tumors to evaluate their contribution to the evolution of tumors.

Methodology: Formalin-fixed paraffin-embedded initial non-muscle invasive bladder tumors from 107 patients were analyzed. Immunohistochemistry staining was performed on 5 µm thick sections using monoclonal antibodies to CD83, CD209, and CD1α, identifying DCs at different levels of maturity. The density of TIDCs in tumor, papillary axis, and stromal areas, and in lymphoid aggregates was determined by two independent observers in a blinded manner.

Results: CD209+ immature TIDCs were the most abundant type of DCs observed in tumors, mostly in stromal areas. CD1α+ TIDCs cells on the other hand were present mostly in tumor areas while CD83+ mature TIDCs predominated in lymphoid aggregates. Although CD209+ and CD83+ tumor infiltration had no prognostic value, their level of infiltration was associated to tumor characteristics. CD209+ immature TIDCs were significantly more abundant in lymphoid aggregates of T1 than Ta tumors ($p=0.04$), while CD83+ mature TIDCs were more abundant in the papillary axis ($p=0.028$), the stroma ($p=0.037$), and in tumor areas ($p=0.017$). The density of CD1α+ cells in lymphoid aggregates was also higher in T1 tumors ($p=0.013$). Moreover, tumors with the highest density of CD1α were more at risk of recurrence ($HR=17.47$, $p=0.019$).

Conclusion: The density of TIDCs in non-muscle invasive bladder tumors is associated with tumor characteristics and evolution.

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