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Editorial

Renal Cell Carcinoma

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Editorial

Kidney cancer is characterized by the progression of malignant tumors in the kidneys affecting approximately 2-3% of heterogeneous group of cancer worldwide. Majority of cancer have been diagnosed with renal cell carcinoma (RCC), the 10th most common cancer of the kidneys. RCC ranks as the sixth most common cancer in men and eighth in women suggesting men are most diagnosed with RCC than women [1]. The disease comprehends 8 major sub-types of RCC, of which maximum cancer deaths representing clear-cell RCC (ccRCC). Clear cell RCC and papillary RCC, the most common sub-type derived from proximal tubules of nephrons designated as epithelial tumor represents 70-75% cancer incidences and other sub-types are rarely reported [2]. There have been cases of unclassified RCC where tumor does not categorize in any of the sub-type of RCC. Annually, 13,500 cases of RCC related disorders, ~295,000 kidney cancer patients are diagnosed. In United States, ~ 65,000 RCC cases are reported with ~14,000 deaths annually (Hsieh et al., 2017). Obesity, hypertension, and cigarette smoking are reported as the major risk factors in RCC malignancy. Epidemiological studies associated with RCC suggest other medical risk factors like cystic disease, kidney transplantation, chronic kidney disease and hemodialysis. Numerous reports suggest RCC resistance to chemotherapy, radiotherapy, and targeted therapy with metastatic cases less than 10% of 5-year survival rate for patients. Due to acquired resistance, about one third patients in initial diagnosis develop progressed metastasis and nearly one-half patients becomes distant metastatic which are associated with higher mortality. Tumor heterogeneity is the prime cause for RCC resistance and ineffective therapy. Targeted therapies including tyrosine kinase and mTOR inhibitors are among the approved first and second line of RCC treatment. VEGF signaling is targeted by multiple tyrosine kinase inhibitors using Sorafenib, Sunitinib, pazopanib, axitinib, cabozantinib and lenvatinib with limited treatment response with progressive RCC metastasis [1,3]. With limited cure and RCC resistance, the immediate requirement for the development of novel and specific therapeutic targets is urgently needed.

Development of immune based therapies is gaining significant attention to treat many cancer types. Infiltrating immune suppressive cells such as myeloid derived suppressor cells, tumor associated macrophages (TAMs), tumor associated fibroblasts (TAFs), tumor associated neutrophils (TANs) and regulatory cells (Treg) into the tumor microenvironment mediate immune dysfunction and block the anti-tumor immunity in tumors. Targeting these immune suppressive cells and pathways like immune

checkpoint inhibitions (PD-1/PD-L1 and CTLA-4/B7) are the current approaches and focus on the patients with progressive RCC. While this single targeted approach is beneficial to only certain subset of patients. Thus, to overcome this challenge combination immunotherapies have been more acceptable in treatment strategies against many cancers including RCC. Other immunotherapies like adoptive cell transfer are also considered as the future immunotherapy as an alternative to checkpoint blockade therapy [4].

We are pleased to invite you to contribute to this inaugural issue focused on the 'Renal Cell Carcinoma'.

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