

Chapter 9

VACCINE THERAPIES FOR UROLOGICAL CANCERS

Mehmet Giray SÖNMEZ¹ & Leyla ÖZTÜRK SÖNMEZ²

Introduction

Not every type of cancer is suitable for vaccine therapies. For a vaccine therapy to be implemented, the cancer should be immunogenic and contain tissue specific proteins, should have a slow progression, and treatments should be feasible. For that reason, studies regarding urological cancers, most of which are phase 1-2 and phase 3, are mostly focused on the kidneys and the prostate and less focused on the bladder (Wang et al, 2005; Chi et al, 2010). The reason for lack of vaccine studies in testicular cancer can be explained by the fact that it spreads and forms metastases very fast, it has various types and it is mostly seen as mixed tumors, and there is blood-testis barrier.

The aim of implementing vaccine therapy is to activate immune response against malignant cells by overcoming the tolerance triggered by the tumor. These treatments are effective using the immune response against cancer. The first oncological vaccine therapy ever published in the literature belongs to Coley dating back to 1893. In that study it is demonstrated that inoperable soft tissue sarcomas regressed by stimulating non-specific immune response with streptococcal toxins (Coley et al, 1893). Vaccine therapies used in urological cancers can be categorized under the following titles; tumor cells (autologous and allogenic), dendritic cell, DNA viral vector, protein/peptide, immune regulators (Schlom, 2012). Although there are old studies on the implementation of vaccine therapies in urological cancer researches have only been intensified recently.

How Does Immune Respond Against Cancer Occur?

First, the macrophages phagocytose cancer cells as the cancer cells start to reproduce and at the same time, other cancer cells also occupy the tissues and cells nearby. Macrophages suppress cancer cells and demonstrate the antigenic parts of cancer cells on the surface. T helper cells then recognize the presented antigens through binding with macrophages (dendritic cells). This binding causes the release of many cytokines from both cells. Thus an antigen presentation occurs as an im-

¹Assistant Prof, Department of Urology, Meram Medical Faculty, Necmettin Erbakan University, Konya, Turkey

²PhD, MD, Department of Physiology, Selcuklu Medical School, Selcuk University, Konya, Turkey.
Department of Emergency Medicine, Meram Medical Faculty, Necmettin Erbakan University, Konya, Turkey

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