RJCE
ISSN: 0972-0626
Volume 28, Issue 01, May, 2024

THE EXPRESSION OF *PD-L1* GENE IN IRAQI CANCER PATIENTS

Anwar Noori Ayoob[1], Adnan Issa Al-Badran[2], Rafid Adil Abood[3]

Dep. of Biology, College of Education / Qurna, University of Basrah, Basrah, (61001), Iraq[1]
Dep. of Biology, College of Science, University of Basrah, Basrah, (61001), Iraq[2]
College of Medicine, University of Basrah, Basrah, (61001), Iraq[3]

ABSTRACT— Tumour cell surface-expressed programmed death-ligand 1 (*PD-L1*) may bind to T cell-expressed programmed cell death-1 (PD-1). Through a decrease in T-cell activity and an acceleration of their apoptosis, the interaction between PD-1 and *PD-L1* may suppress T-cell responses. High amounts of *PD-L1* are expressed by a variety of malignancies. This is the first investigation of *PD-L1* expression in Iraq, specifically in the Basrah governorate, using BC, CRC, and PC patients. One hundred and one blood samples from patients with prostate, colorectal, and bladder cancer were obtained for this study. However, as a control group, 101 blood samples from people who were cancer-free were gathered. After extracting RNA from two millilitres of peripheral blood, *PD-L1* mRNA was quantified using qPCR and the RNA was transcribed to cDNA. The demonstrated that the *PD-L1* gene was overexpressed in bladder cancer, with expression levels assessed at ± 3.24 for controls and ± 23.19 for patients. When compared to a healthy comparison group, the patients' gene expression changed seven times. In colorectal cancer (CRC), the *PD-L1* gene was overexpressed, with expression levels measured at ±2.90 for controls and ± 15.06 for patients. This indicates that the patients' gene expression differed by five times from the healthy control group. In the present study, *PD-L1* gene was expressed at a significantly higher level in the BC, CRC, but not in PC patients compared in the controls group.

KEYWORDS: *PD-L1* gene, Bladder cancer, Prostate cancer, colorectal cancer, qPCR

1. INTRODUCTION

Globally, the incidence of cancer is expected to increase, with 14.1 million then develop to 20 million cases in in 2012, and 2025 respectively [1]. A major cause of mortality, cancer claims the lives of millions of people every year. One of the most prevalent forms of cancer is colorectal cancer. Together with surgery, radiation, and chemotherapy, immunotherapy has emerged as a major cancer treatment within the last ten years. Oncologists are currently pursuing immune checkpoint blockade techniques that target either CTLA-4 or *PD-1*/*PD-L1*, that treat cancer by T-cell against the cancer cells [2]. According to estimates from the World Health Organisation, cancer of the bladder is the tenth common cancer worldwide, accounting for 213,000 deaths and 573,000 new cases in 2020 [3]. Bladder cancer ranks among the top ten most prevalent cancers worldwide, has a high rate of morbidity and mortality, and places a significant financial strain on healthcare systems. It is a worldwide health concern with variations in incidence and prognosis based on gender [4].

Demographic changes, particularly population growth and aging, and exposure to risk factors, particularly tobacco smoking, have an impact on the incidence of bladder cancer, bladder cancer can be classified as either non-muscle invasive or muscle invasive, based on different molecular subtypes and numerous pathogenic pathways [4]. According to estimates, occupational carcinogens cause 8–11% of bladder cancer