

Early Detection of Prostate Cancer Using PDL-1 and IL-6 In Najaf Al-Ashraf Governorate

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ABSTRACT

Background: Prostate cancer (PCa) stands as the most common type of cancer affecting men globally, exhibiting considerable differences in incidence and mortality rates across various populations. **Aim the study:** The study aims at the early diagnosis of prostate cancer using immunological markers. **Methods:** The current study, collected 240 samples blood divided into first group was a healthy which included man (60) while second group interested patients of prostate cancer from (180) man and by used ELAISA techniques for prognosis prostate cancer by serum parameters programmed cell death-ligand 1 (PDL-1 and Interleukin 6 (IL-6) is an interleukin that acts as both a pro-inflammatory cytokine and an anti-inflammatory myokine. **Results:** The statistical results of the immune markers (PDL-1, IL-6) when (180) samples collected from patients and (60) healthy showed relationship with cancer when compared with the results of healthy people. It was highly significant and p . Value <0.0011 , in the Najaf Al-Ashraf. **Conclusion:** All immunological signs indicated the presence of cancer in the body, confirming the clinical signs approved by non-invasive diagnosis.

Key words: Safety PDL-1, Immunemarkers, and IL-6 Parameters.

Article Information

Received: October 30, 2025; Revised: November 28, 2025; Online: December 2025

INTRODUCTION

Prostate cancer (PCa) stands as the most common type of cancer affecting men globally, exhibiting considerable differences in incidence and mortality rates across various populations (1). Generally, in the United States, prostate cancer (PCa) is the primary cause of cancer-related fatalities among men, whereas in India, it ranks as the third most common cancer among the male population. Prostate cancer affects the prostate gland, an integral part of male the reproductive system(2). PDL1 is a protein that assists in preventing immune cells from attacking benign cells in the body (3).

Typically, immune system fights external agents such as viruses and bacteria, instead of his own healthy cells. (4). Certain cancer cells exhibit elevated levels of PDL1, which enables them to "deceive" the immune

system, thereby evading detection and attack as foreign, harmful entities (5). Also referred to as programmed death-ligand 1, PD-L1, or PDL-1, ELAISA PDL1 testing is utilized to determine whether you have a cancer that could potentially benefit from immunotherapy (6). PDL1 testing is recommended if you have been diagnosed with any of the following cancers : Non-small cell lung cancer, melanoma, Hodgkin lymphoma, breast cancer, kidney cancer, and prostate cancer. Certain tumors may express PD-L1 and could potentially respond to immunotherapy utilizing program death 1 (PD-1) / program death ligand 1 (PD-L1) immune checkpoint blockers (7). Elevated levels of PDL1 are frequently observed in these cancers, along with several other cancer types.

Cancers characterized by high PDL1 levels can often be effectively managed through immunotherapy (8). Various forms of cancer progress into solid tumors; however, some cancers, like leukemia, do not form solid tumors. (9). Nonetheless, benign tumors do not penetrate or spread into the surrounding tissues, Benign tumors seldom return after they have been removed, while malignant tumors may occasionally reappear, Nonetheless, benign tumors that grow considerably can be fatal. Certain tumors, like benign brain tumors, have the potential to lead to severe illnesses or even result in death (10,17). Interleukin 6 (IL-6) is a type of interleukin that acts as a pro-inflammatory cytokine and as an anti-inflammatory myokine simultaneously. (11).

In humans, the IL6 gene encodes it, making it the main cytokine found of central nervous, where it maintains physiological functions including neurogenesis, neuronal differentiation, and neuroprotection against tissue damage. (12). Furthermore, Osteoblasts are secrete IL-6 to promote the producing of osteoclasts(13). Additionally, ells of smooth muscle situated in the tunica media of different blood vessels which synthesize IL-6, functioning as stimulate-inflammatory cytokine (14).

Anti-inflammatory properties to IL-6 like a myokine are facilitated through its ability to inhibit tumor necrosis factor.alpha and Interleukin-1, as well as its activated of Interleukin-1ra and Interleukin-10 (15).

The study aims at the early diagnosis of prostate cancer using immunological markers.

MATERIAL AND METHODS

The experimental design

ELISA immunoassay analysis for both (PDL-1 and IL-6) was conducted separately in tumor-cells (T) and lymphocytes that invade tumors (TILs) in the connective tissue.

Blood serum was collected from 240 blood samples taken from all hospitals in Najaf.

The sample collection included clinical parameters such as dysuria, pain and heaviness in the lower bladder area, erectile dysfunction, and decreased sexual desire, in addition to recording the patient's age, chronic diseases, and bruising in the genital area, as well as alcohol consumption and smoking.

Cases with missing data or those who had received chemotherapy or radiotherapy were excluded. Collected 240 samples patients included 180 men divided in to 60 Patients $\geq$ 60 years and Patients $<$ 60 years while 60 healthy, were take (5ml) of blood was collected from the vein directly using disposable syringe. A serum gel tube was used to hold the blood sample, it was left undisturbed for 30 minutes. The serum was created by centrifuging At a speed of 3000 revolutions per minute for 10 minutes and stored at -20C° (unless it was promptly analyzed) and then used (16).

RESULTS

The statistical results of the immune markers (PDL-1 and IL-6) when (180) samples collected from patients and (60) healthy showed relationship with cancer when compared with the results of healthy people, smokers and aging.

It was highly significant and PDL_1 p.Value < 0.0011 , the Patients ≥ 60 years while was p.Value < 0.001 to Patients < 60 years but IL-6 p. Value < 0.0002 to Patients ≥ 60 years while patient $\leq 60 < 0.001$ where the p.value to Patients < 60 years was highly significant from less than as shown in the table (1).

The percentage of smokers who were over 60 years old was 83%, while the percentage of those who were nonsmoker was less than 80 years old was 67%.

Table (1): The immunomarkers between patients and healthy groups with aging and smoking.

Group Statistics			
Parameters	Groups	Mean $\pm$ Std. Error	P-value
PDL_1	Control	0.89 $\pm$ 0.009	< 0.0011
	Patients $\geq$ 60 years with smoker 83%	1.90 $\pm$ 0.03	
	Patients<60 years with smoker 67%	2.82 $\pm$ 0.02	< 0.001
IL-6	Control	0.01 $\pm$ 0.006	< 0.0002
	Patients $\geq$ 60 years with smoker 83%	0.31 $\pm$ 0.01	
	Patients<60 years with smoker 67%	1.89 $\pm$ 0.02	< 0.001

DISCUSSION

The data revealed that PDL-1 was increased level by ELISA reader as in table(1), because The immune system's response regulation is significantly influenced by ligand, programmed cell death.ligand 1 along with largely dependent on programmed, cell of death.1 (17, 18).

Additionally, the prognostic importance of PD-L1 expression in prostate cancer has been examined; however, the findings continue to be contentious (19). Consequently, we gathered pertinent data and conducted a meta-analysis to assess the prognostic significance of PD-L1 and investigate the correlation between PD-L1 and clinicopathological factors in prostate cancer (20).

The significance of this addition is particularly pronounced for smoking patients, as it correlates with the upregulation of immunosuppressive pathways, which encompass primary "immunodeficiency" and the expression of "PD.L1" and the "PD.1" checkpoint. Furthermore, there is a downregulation of pathways associated with

"antigen processing and presentation" as well as "NF-kappa-B signaling" (7).

The findings indicated that the level of IL-6 was elevated as measured by the ELISA reader as in table (1), because "demonstrated increased expression in prostate cancer samples as opposed to "non-malignant tissues at the "mRNA level and A significant relationship was found between protein, levels and positive IL-6, staining in "relation to increased clinical "stages (21,22).

Tumor progression significantly depends on angiogenesis, and levels to angiogenic factors may serve as valuable indicators for predicting how patients with cancer will respond to treatment and their overall outcomes (23). Moreover, it has been observed that IL-6 fulfills several roles in angiogenesis and vascular, of remodeling, facilitating angiogenesis" through the transcription of VEGF' and MMP-9' molecules in a manner' reliant on STAT3 manners (24).

CONCLUSION

All immunological signs indicated the presence of cancer in the body, confirming the clinical signs approved by non-invasive diagnosis.

RECOMENDATION

It is necessary to perform the above immunological tests before surgical intervention because they indicate correct results. Use the same brands in order to approve them to detect all types of cancers.

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