

Variations of Prostate-Specific Antigen and Cytokines in Patients with Benign Prostatic Hyperplasia

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Abstract

The etiology of benign prostatic hyperplasia (BPH) is still obscure. Data supporting an interaction connecting prostate hyperplasia and immune dysregulation is accumulating. Serum levels of pro-inflammatory and anti-inflammatory cytokines measured by enzyme-linked immunosorbent assay in 3 groups of patients with BPH. The groups included 12 men who had mean prostate specific antigen (PSA) serum concentration 95 ± 13 ng/ml, 14 men, with mean PSA - 4.4 ± 1.2 ng/ml and 11 men, with mean PSA - 10.7 ± 2.3 ng/ml. It was found that level of anti-inflammatory cytokine IL-4 significantly elevated while amount of pro-inflammatory IFN-gamma did not change. The increase of IL-4 correlated with a level PSA and maximum quantity was found in the patients 3 groups. Our study indicates that a high level of IL-4 is directly associated with elevated PSA with severities of BPH.

Keywords: *BPH, PSA, Cytokines, IL-4*

Etiology of Benign Prostatic Hyperplasia is not completely studied yet. That's why the pharmacological treatment of this disease is still problematic. It is supposed, that development of this pathology is caused by initiation of autoimmune processes, in which induction the leading role has a non-priorite response of immune system. The last one can be caused by chronic inflammatory processes or persisting infections, during which lymphocytes, infiltrated in prostate, express unwished type of cytokine and cause the beginning of hyperplastic processes.

PSA can be initiator of improper inflammatory processes, running in prostate. PSA action is correlated with change of inflammatory cytokine profile. The main immunosuppressive cytokines, among them interleukin-4, cause cell resistance to apoptosis. All of these can be a predictor of BHP development under the androgen deprivation circumstances.

The aim of this study was to analyze the changes of PSA, by detecting plasma interferon-gamma (Th1) and interleukine-4 (Th2) in the case of benign prostatic hyperplasia.

According to disease severity, duration and PSA level in blood, 3 groups of patients have been presented. In first group (12 persons) PSA level was 0.9 ± 3 ng/ml. In second group (14 persons) - 4.4 ± 1.2 ng/ml. and in third group (11 persons) - 10.7 ± 2.3 ng/ml.

There was no patients with digital rectal examination findings suggested to prostate cancer as well as no carcinomatous transformation was identified during histomorphological study of post-adenomectomy tissue (35 patients). Investigations in blood plasma were carried out with Roche's standard immunoenzyme test-systems.

It was found that level of only IL-4 (anti-inflammatory cytokine) correlates with PSA concentration changes,

when as changes of inflammatory cytokine - gamma-interferon are not significant. Level of IL-4 in I group was 95+/-12 pg/ml. In II group - 165+/-24 pg/ml. and in III group - 216+/-44 pg/ml. The level of gamma-interferon was 8.5+/-0.9 pg/ml (I group), 12.2+/-3.4 pg/ml. (II group) and 11.8+/-2.8 pg/ml (III group).

anti-apoptotic features of suppressive cytokines and among them IL-4, we supposed that in the case of androgenic insufficiency prostatic cell resistance to apoptosis might be caused by non-priority anti-apoptotic cytokines.

Data indicates that Th2-helper immune response dominates in patients suffered with BPH. Because of

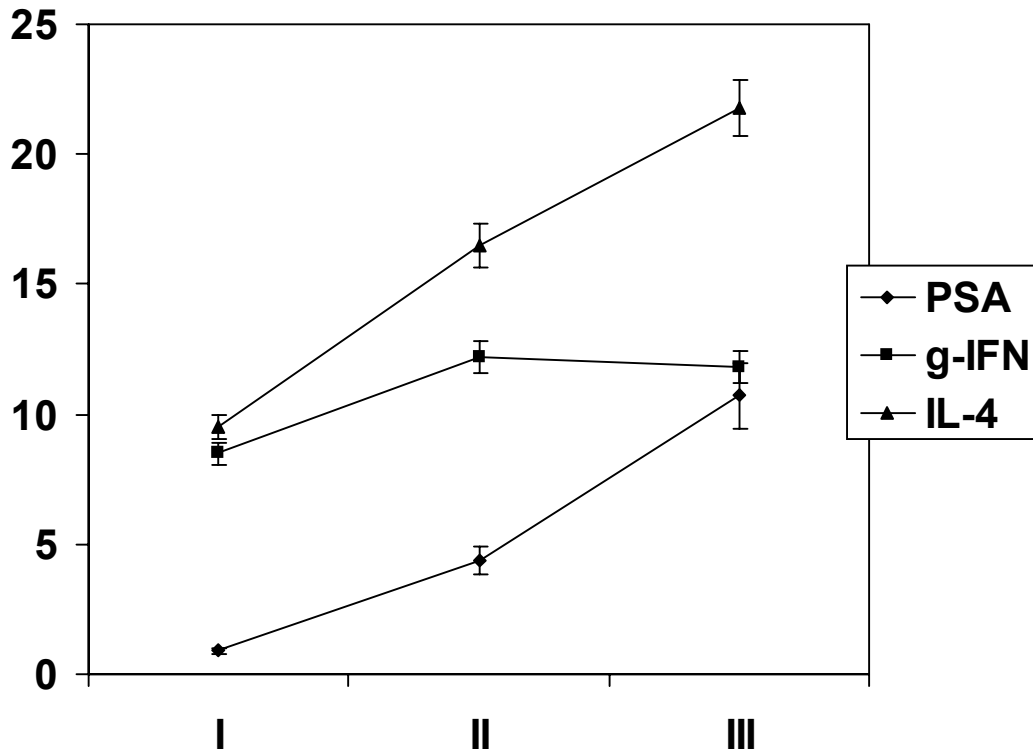


Fig.1 Levels of gamma-interferon (g-IFN), interleukine-4 (IL-4) and prostate-specific antigen (PSA) in several groups of patients, suffered with benign prostatic hyperplasia.

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Изменения простат-специфического антигена и цитокинов при доброкачественной гиперплазии предстательной железы

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Этиология доброкачественной гиперплазии предстательной железы (ДГПЖ) окончательно не выяснена. Предполагается, что одной из причин ДГПЖ является иммунная дисрегуляция. Исследовался уровень воспалительного цитокина гамма-интерферона (ИФ) и супрессорного цитокина интерлейкина 4 (ИЛ-4) в плазме крови больных с ДГПЖ с различным содержанием простат-специфического антигена (ПСА). Установлено, что количество ПСА коррелирует с содержанием ИЛ-4 и не коррелирует с концентрацией ИФ в плазме крови. По-видимому что неприоритетный иммунный ответ может индуцировать антиапоптотические процессы в предстательной железе при ДГРЖ.

Ключевые слова: *ДГПЖ, ПСА, цитокины, интерлейкина-4*