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Immunoglobulins in Tissues of Human Benign Prostatic Hypertrophy

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Summary. The concentrations of immunoglobulins (IgG, IgA and IgM) have been determined in tissues of human benign prostatic hypertrophy by means of different immunological techniques. Results obtained show that IgA is quantitavely the most important immunoglobulin in prostatic tissue. Treatment with anti-androgens can change the Ig-pattern, in particular the levels of IgA and IgM.

Key words: Prostate immunoglobulins, Radial immunodiffusion, Rocket electrophoresis.

Introduction

Agargel electrophoresis of prostate homogenates gives an electrophoretic pattern showing several oligoclonal bands in the γ-region [8].

The aim of the present study was to quantify, by means of different immunological techniques, the values of the immunoglobulins IgA, IgM and IgG in tissues from patients with benign prostatic hyperplasia (BPH). IgD and IgE could not be detected with the methods used.

Material and Methods

17 BPH tissues (14 from untreated patients and 3 from patients treated with anti-androgens), obtained after open surgery, were brought to the laboratory in liquid nitrogen. The samples were treated immediately or stored at −70 °C. Homogenates of the tissues were made following the technique of van Camp [8]. Total protein was measured by the biuret method [1].

Normal prostates were not available. Autopsy material is unsuitable for the study of proteins, due to the proteolytic activity of prostatic tissue [9].

The immunoglobulins IgA, IgM and IgG were determined by the method of Mancini et al. [6] in commercialy available plates (Behringwerke, Marburg, FRG). Radial immunodiffusion following Fahey and McKelvey [2] was carried out in RID-system plates from ICL Scientific (Euclid, California, USA) for IgG and IgM. Rocket-immunoelectrophoresis following Laurell [5] has been carried out, only for IgG, in commercially available plates (ICL Scientific, Euclid, California, USA) or in plates made in the laboratory. Furthermore the IgG content was also determined by means of the spectrophotometric measurement of the immunoprecipitate (Tinaquant, Boehringer Mannheim, FRG), adding antigen to antibody in the presence of polyethyleneglycol.

Results obtained are expressed in mg immunoglobulin per g protein in the homogenate. The values obtained from treated and untreated patients were analysed statistically, using a non-parametric test [7]; $P < 0.05$ is considered as significant.

Results

Results obtained are represented in Table 1.

Discussion

Examining prostatic fluid, Grayhack et al. [3] suggested the possibilities of the study of proteins in prostatic fluid in relation to the diagnosis of prostate cancer. Using radial immunodiffusion for the analysis of several proteins in prostatic fluid, Grayhack et al. [4] attempted to identify an indicator specially associated with prostate cancer. The concentration obtained by those authors for immunoglobulins showed that in prostatic fluid IgA is quantitatively the most important immunoglobulin.

As has already been demonstrated by Van Camp [8] for prostate tissue, IgG is also increased in prostatic fluid obtained from cancer patients.

Grayhack et al. [4] did not mention in their studies the eventual influence of anti-androgens or any other treatment on the protein profile. From the results we have obtained, it is clear that anti-androgen treated patients gave a changed immunoglobulin profile. While IgG was not influenced, IgA and IgM were significantly increased. These statements are in favour of the hypothesis that Ig-globulins in prostatic tissue are hormone dependent.

Table 1. Ig concentrations in homogenates of treated and untreated BPH

Ig	Untreated patients (n = 14)		Patients treated with anti-androgen (n = 3)	Statistical significance
	M	SEM		
a) Mancini-technique				
IgG	35.01	2.66	28.82	$0.20 < p < 0.25$
IgA	46.37	6.42	83.94	$0.001 < p < 0.001$
IgM	4.46	0.38	13.65	$p < 0.001$
b) Fahey and McKelvey-technique				
IgG	38.32	3.63	32.74	$0.20 < p < 0.25$
IgM	4.97	0.58	22.00	$p < 0.001$
c) Rocket-immunoelectrophoresis				
IgG	43.53	3.73	37.78	$0.30 < p < 0.40$
d) IgG	32.70	1.82	31.90	$0.80 < p < 0.90$

Results in mg/g protein. n = number of cases; M = mean; SEM = standard error of the mean

The results obtained for untreated BPH can serve as reference for comparison with the Ig-pattern obtained in prostatic cancer tissue.

In summary, our results indicate that:

a) treatment with anti-androgens changes the Ig-profile of prostatic tissue, in particular IgM and IgA are increased.

b) IgA is quantitatively the most important Ig-globulin in BPH-tissue.

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