

## CLINICAL SCIENCE

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### INCIDENCE OF HISTOLOGICAL PROSTATITIS AND ITS CORRELATION WITH PSA DENSITY

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**OBJECTIVE:** The aim of this study was to determine the incidence of asymptomatic, histologically proven prostatitis in men with symptoms of benign prostate hyperplasia and to observe the correlation between asymptomatic prostatitis and prostate specific antigen (PSA) density.

**INTRODUCTION:** The incidence of type IV prostatitis is unknown. There is a tendency to correlate the presence of inflammatory prostatitis with an elevation of PSA.

**MATERIALS AND METHODS:** From August 2000 to January 2006, 183 patients who underwent surgical treatment for benign prostate hyperplasia as a result of obstructive or irritative symptoms were prospectively studied. In accordance with the histology findings, these patients were divided into two groups: group I included patients with the presence of histological prostatitis and group II included patients with the absence of histological prostatitis. The mean PSA densities were compared.

**RESULTS:** Histological evidence of prostatitis was observed in 145 patients. In this group, the mean PSA density was  $0.136 \pm 0.095$ . In 38 cases, there was no evidence of inflammation upon histological examination of the surgical samples. In these 38 cases, the mean PSA density was  $0.126 \pm 0.129$ . No statistically significant differences were detected between the two groups; the p-value is 0.124.

**CONCLUSION:** Abnormal PSA density should not be attributed to the inflammatory prostatitis process.

**KEYWORDS:** Prostate; Biopsy; Benign prostate hyperplasia; Prostatitis; Prostate specific antigen.

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#### INTRODUCTION

Chronic prostatitis is a disease with uncertain etiology. The typical histological appearance of chronic prostatitis is defined by the invasion of leukocytes, especially polymorphonuclear leukocytes, into prostatic ducts and the periprostatic tissue.<sup>1,2</sup> The clinical presentation of prostatitis is widely variable, ranging from asymptomatic patients to patients with chronic, potentially incapacitating, pelvic pain.

The 1995 National Institute of Health (NIH) classification divides prostatitis into four categories: type I

and type II are associated with bacterial infection, type III is associated with chronic pelvic pain with (IIIa) or without (IIIb) inflammation of the gland, and type IV includes asymptomatic patients in which the diagnosis is made after a biopsy for elevated prostate specific antigen (PSA), an abnormal digital rectal examination, or an examination of surgical specimens from transurethral or open surgery for benign prostatic hyperplasia.

The incidence of type IV prostatitis is unknown. There is a tendency to correlate inflammatory prostatitis with an elevation of PSA. Despite this controversy, when prostatitis is found in biopsy samples of patients with an elevated PSA, the rise in PSA is usually attributed to the presence of prostatitis.

The aim of this study was to determine the incidence of asymptomatic, histologically proven prostatitis in men with symptoms of benign prostate hyperplasia (BPH) and

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**Table 1** - Patients characteristics of group I and group II

	N	Age	IPSS	Prostate Volume	PSA	PSA density	p
Group I	145	67 ± 4.3	19 ± 6.1	39.2 ± 10.5	5.1 ± 2.5	0.13 ± 0.095	0.124
Group II	38	64 ± 5.2	21 ± 4.2	42.4 ± 12.3	5.3 ± 3.2	0.126 ± 0.129	

to observe the correlation between asymptomatic prostatitis and PSA density.

## MATERIALS AND METHODS

From August 2000 to January 2006, 183 patients who underwent surgical treatment for BPH due to obstructive or irritative symptoms were prospectively studied. Of these patients, 45 were treated by open surgery and 138 by transurethral resection of the prostate (TURP). Patients who complained of chronic pelvic pain or who had a history or laboratory exam suggesting acute prostatitis were excluded.

All patients underwent a digital rectal examination, serum PSA measurement, and supra pubic ultrasonograph of the prostate with volume measurement before surgery.

After surgery, the patients were divided into two groups according to the histological findings: group I included patients with the presence of histological prostatitis and group II included patients with the absence of histological prostatitis. A single pathologist with extensive experience in urological pathology reviewed all cases. The mean PSA densities obtained for groups I and II were compared using the Student's t-test.

## RESULTS

Histological evidence of chronic prostatitis was present in 145 (78%) of the surgical specimens. The mean PSA density in this group of patients was  $0.136 \pm 0.095$ . Among 38 cases, no signs of inflammation were observed on histological examination of the surgical samples. In this group, the mean PSA density was  $0.126 \pm 0.129$ . No statistical difference was detected between these two groups ( $p=0.124$ ). The mean age, international prostate symptom score (IPSS), prostate volume, PSA, and PSA density of both groups are listed in Table 1.

## DISCUSSION

Histological evidence of prostatitis in asymptomatic men appears to be very common. Nickel et al. reported

inflammation in all 80 specimens reviewed from material obtained after the patients underwent TURP.<sup>1</sup> In a similar study, Khoen et al. found a 98% incidence of prostatitis in 168 asymptomatic patients.<sup>3</sup> In studies utilizing biopsy sample analysis, a more variable incidence of prostatitis, ranging from 17.2% to 47%, was obtained.<sup>4</sup>

However, whether these inflammatory findings correlate with elevated PSA levels remains controversial. Clinical data are available in support of this theory;<sup>5,6</sup> however, other studies were unable to establish a correlation.<sup>4,7</sup> It should also be noted that well differentiated prostate cancer may correlate with extraprostatic disease.<sup>8</sup>

In some patients, the area of inflammation may be very small. One study evaluated the correlation between PSA level, inflammatory cell density, and foci of inflammation (glandular, peri-glandular, stromal, or peri-urethral). No difference was observed in PSA levels when stratifying by any of the other variables.<sup>1</sup>

In the present study, a high incidence of asymptomatic, histologically proven prostatitis was found (78%). As the two groups in this study were not homogeneous regarding the volume of the prostate, we decided to compare the PSA density instead of the total PSA value. Using this method, it was possible to exclude the influence of prostatic mass on the results.

In the group with no histologically proven prostatitis, the mean PSA density was  $0.136 \pm 0.095$ . In comparison, the PSA density was  $0.126 \pm 0.095$  in men with no prostatitis. No statistically significant difference was detected between the patients with prostatitis and those without prostatitis. These data suggest that the incidental finding of histological prostatitis is very common and is not correlated with an increased PSA value.

## CONCLUSION

Patients with an elevated PSA and histologically proven, asymptomatic inflammation of the prostate should continue with regular follow-ups and treatment. The abnormal PSA level does not seem to be attributed to the inflammatory process.

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