

THE INCIDENCE AND CORRELATION OF CHRONIC PROSTATITIS WITH PSA IN BPH PATIENT

¹Daniel Mahendra Krisna, ²Hariatmoko, ¹Pinzon R.

¹Faculty of Medicine/Duta Wacana Christian University, Yogyakarta.

²Department of Surgery, Bethesda Hospital, Yogyakarta.

ABSTRACT

Objective: The aim of this study is to determine the incidence of incidental chronic prostatitis proven by biopsy in prostate enlargement patients and to correlate with Prostate Specific Antigen (PSA) level serum. **Material & Methods:** This was a retrospective study with cross-sectional method. All of the prostate enlargement subjects with urinary retention and treated by surgical therapy were taken into inclusion criteria. The patient with acute prostatitis proven by biopsy and uncompleted medical records were excluded. Statistical analysis used Spearman correlation test. **Results:** The mean values of age and PSA were 70.24 years and 27.2 ng/mL. The patients characteristic such as surgery waiting time were 81 patients in 1-3 days, the most common length of stay were 3 patients (4%) for 1-3 days. The most common biopsy result was Benign Prostatic Hyperplasia (BPH) in 55 patients (61.5%). 64 patients (70.3%) were treated by Trans Urethral Resection of Prostate (TURP) and 14 patients (9.9%) had secondary surgery. There was a correlation between chronic prostatitis with PSA levels in BPH patients ($p=0.000$). **Conclusion:** Chronic prostatitis is often found incidentally in BPH patients and affecting PSA serum level. The existence of chronic prostatitis in BPH may predict the progress of prostate growth.

Keywords: Benign prostatic hyperplasia, chronic prostatitis, prostate specific antigen, prostate.

ABSTRAK

Tujuan: Penelitian ini bertujuan untuk mengetahui insidensi prostatitis kronik yang dibuktikan dengan pemeriksaan patologi anatomi pada pasien dengan pembesaran prostat dan korelasinya terhadap kadar Prostate Specific Antigen (PSA) dalam darah. **Bahan & cara:** Penelitian ini adalah penelitian retrospektif dengan metode potong-lintang. Semua pasien pembesaran prostat dengan keluhan utama retensi urin akut dan dilakukan terapi pembedahan menjadi kriteria inklusi penelitian ini. Pasien dengan prostatitis akut terbukti dari hasil biopsi dan rekam medis yang tidak lengkap menjadi kriteria eksklusi. Analisis statistik menggunakan uji korelasi Spearman. **Hasil:** Dari 91 subjek didapatkan rerata usia subjek adalah 70.24 tahun dan rerata kadar PSA dalam darah adalah 27.2 ng/mL. 81 subyek memiliki waktu tunggu operasi 1-3 hari, lama rawat inap selama 4-6 hari (49.5%), 61.5% terbukti Benign Prostatic Hyperplasia (BPH) pada hasil histopatologinya. 64 subyek (70.3%) dilakukan terapi Trans Urethral Resection of Prostate (TURP) dan 14 subyek (9.9%) mendapatkan pembedahan sekunder. Terdapat korelasi antara prostatitis kronik terhadap kadar PSA pada pembesaran prostat ($p=0.000$). **Simpulan:** Insidensi prostatitis kronik pada pembesaran prostat cukup tinggi dan mempengaruhi kadar PSA. Adanya prostatitis kronik pada kasus BPH diduga dapat menjadi acuan akan progresifitas pertumbuhan prostat.

Kata kunci: Benign prostatic hyperplasia, prostatitis kronik, prostate specific antigen, prostat.

Correspondence: Daniel Mahendra Krisna, c/o: Faculty of Medicine/Duta Wacana Christian University. Jl. Timoho no 316, Yogyakarta. Mobile phone: 087838343820. Email: Danielkrisna24@yahoo.com.

INTRODUCTION

Prostatitis is an inflammation occurred in the prostate gland and categorized by 4 categories, which is Acute Bacterial Prostatitis (Category I), Chronic Bacterial Prostatitis (Category II), Chronic Pelvic Pain Syndrome (Category III), and Asymptomatic Chronic Prostatitis (Category IV).¹⁻⁴ Symptomatic prostatitis need antibiotic treatment to reduce symptoms that interfere with quality of life

of patients,¹ but in asymptomatic prostatitis patients often do not realize that they has prostatitis so rarely get the treatment. Asymptomatic prostatitis is often accidentally found in infertility and prostate enlargement cases. Elkahwaji et al,⁵ suggests that a chronic bacterial prostatitis can trigger a neoplasia process of the prostate gland epithelial.

One of the controversial prostate examinations, but specific to prostate, is Prostate Specific Antigen (PSA) serum level examination. PSA

increases often correlated with prostate enlargement, and could be indication to do a biopsy if digital rectal examination results is abnormal too. PSA screening is suggested by International guidelines such as American Urology Association (AUA) or European Association of Urology (EAU) to men above 40 years old with risk factors. PSA affected by prostate manipulation or inflammation, hence over diagnose often found and lead to inadequate treatment and over cost.⁶

OBJECTIVE

The aim of this study is to determine the prevalence of incidental chronic prostatitis proven by biopsy in prostate enlargement patients and to correlate with PSA level serum.

MATERIAL & METHODS

This was a retrospective study with cross-sectional method. This study was conducted at Bethesda Hospital Yogyakarta in the period May until August 2016. All of the prostate enlargement subjects with urinary retention and treated by surgical therapy in the period January 2014 until January 2016 were taken into inclusion criteria. The patient with acute prostatitis and uncompleted medical records were excluded. Data were secondary data that obtain from the medical record, such as Age, preoperative waiting time, length of stay, PSA serum level, Type of surgery, and Histopathology finding. The sample size was calculated by power and sample size calculation software. Statistical analysis used Spearman correlation test. *P* value less than 0.05 was statistically significant.

RESULTS

The mean values of Age and PSA were 70.24 (range: 54-100 years) and 27.2 (range: 0.59-101

ng/mL). The patients characteristic such as surgery waiting time were 81 patients in 1-3 days, the length of stay were 45 patients (49.5%) for 4-6 days. Of 91 patients who underwent histopathology examination, the most common biopsy result was BPH in 55 patients (61.5%). 64 patients (70.3%) were treated by TURP and 14 patients (9.9%) had secondary surgery, such as Lithotripsy. All of the subject characteristics were shown in the table 2. There was a correlation between chronic prostatitis with PSA levels in BPH patients ($p=0.000$) (Table 1).

DISCUSSION

Enlargement of the prostate gland is one of the diseases that often occur in elderly men.² Enlargement of the prostate gland does not cause disability, but interfere with quality of life.^{2,3}

The risk of an enlarged prostate gland increases with age.^{3,4} The mean age of the subjects in this study was 70.24 with an age range from 54 to 100 years. Most of the patients had been waiting 1-3 days before had the surgical treatment (89%). Kravchick et al,⁷ conducted a study of 63 patients by measuring PSA levels prior to catheter. Then he re-evaluated the levels of PSA 5 days after catheter insertion. He found significantly increased in PSA levels serum ($p=0.001$). In this study of patients suffering from urinary retention will be performed catheterization before surgery. Therefore, the waiting time is longer operation will certainly affect the duration of catheter placement and increase levels of PSA.

Both the incidence of prostate enlargement and inguinal hernia are increasing in the elderly population. There are correlation between inguinal hernia and prostate enlargement. In BPH, there is increasing in intraabdominal pressure caused by infravesical obstruction. Inguinal hernia would happen if the pressure damage the inguinal canal tissues. Some literature suggests that the risk for a recurrence of an inguinal hernia would be an

Table 1. The correlation between chronic prostatitis and BPH.

Variable	BPH	BPH + Chronic Prostatitis	Adenocarcinoma	<i>p</i> value
Age (mean [years] + range [years])	70.07 + 54-100	70.25 + 60-86	70.41 + 59-41	0.813
PSA (mean + range [ng/mL])	19.46 + 3.32-71.42	18.28 + 3.10-45.40	69.49	0.000
Length of Stay (mean [day/s])	1.15	1.21	2.33	0.842

BPH: Benign Prostatic Hyperplasia, PSA: Prostate Specific Antigen.

Table 2. The Characteristic of Subjects.

	Mean \pm SD (n)	Range
Age	70.24 \pm 9.1	54-100 year
PSA	27.2 \pm 27	0.59-101ng/mL
Surgery Waiting Time	Frequency (n)	Percentage (%)
1-3 days	81	89.0
4-6 days	7	7.7
>7 days	3	3.3
Length of Stays		
1-3 days	3	3.3
4-6 days	45	49.5
>7 days	43	47.3
Histopathology result		
BPH	56	61.5
BPH with Chronic Prostatitis	20	22.0
Adenocarcinoma	15	16.5
Surgery method		
TURP	64	70.3
TURP + secondary surgery	9	9.9
Open prostatectomy	14	15.4
Open prostatectomy + secondary surgery	4	4.4
Secondary Surgery		
Herniorraphy	3	23.1
Stone Evacuation	3	23.1
Lithotripsy	4	30.8
Vesicolithotomy	1	7.7
TURB	1	7.7
Hemorhoidectomy	1	7.7

TURP: Trans Urethral Resection of Prostate, TURB: Trans Urethral Resection of Bladder.

increase in inguinal hernia repair treatment before BPH treatment.^{8,9}

Nowadays TURP is the gold standard therapy for enlargement prostate such as BPH and prostate cancer. But in some developed areas where there is limitation to perform endoscopic surgery open prostatectomy remains enlarged prostate treatment. Prostate larger than 80-100 grams and patients with coexisting disorder remains an indication to perform an open prostatectomy.^{10,11}

Chronic inflammation being one of the BPH pathogenesis components besides androgen signaling alteration. Inflammatory mediators has contributed in prostatic epithelial growth and stromal cells through cytokines and down regulate of

the prostate cell apoptosis.¹² Inflammation leads to severe oxidative and nitrosative damage in DNA and prostate cells through releasing free radical, resulting genom alteration. Some study found that the chronic inflammation process could be predictor factors of prostate growth progress in BPH.¹³

The patient with asymptomatic chronic prostatitis tend not to bother by the disease so often found incidental while biopsy was taken. Ceylan et al,¹⁴ studied 229 patients who was suspected cancer prostate with elevating PSA level serum. He found that 28% patients has been diagnosed chronic prostatitis by biopsy. This is similar to our study that found chronic prostatitis in prostate histopathology result about 26.9%.

Sarwar et al,⁶ comparing prostate biomarkers influence such as PSA and Prostate Acid Phosphate (PAP) to BPH, carcinoma prostate, and prostatitis. He suggested that PSA did not used to diagnostic modality alone. The high level of PSA in BPH and carcinoma prostate, with or without prostatitis, should be proved by biopsy. An inflammation process in prostatitis increasing PSA by leaked out of the acini.¹⁵ Irani et al,¹⁶ stated that PSA serum level would not increase in prostatitis if there were no glandular epithelial damage. Our study found a correlation between PSA level and chronic prostatitis in BPH patient ($p=0.000$). The limitation of our study are variable biased that could not prevented, such as prostate manipulation before the PSA examination and histopathology result did not exam by a single pathologist.

CONCLUSION

Chronic prostatitis is often found incidentally in BPH patients and affecting PSA serum level. High PSA levels in prostate enlargement suggest with or without chronic prostatitis should be treated as BPH or carcinoma prostate until proved by biopsy. But the existence of chronic prostatitis in BPH may predict the progress of prostate growth.

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