Prevalence of Prostate Cancer in Aging Males Receiving PSA (Prostate Specific Antigen) Screening Test (A Campaign for Celebration of Siriraj Established Day)

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Prostate cancer is a potential men's health problem. The prevalence of prostate cancer continues to rise. Serum PSA (Prostate Specific Antigen) can be used as a screening tool for detection of early prostate cancer. However, a screening program for prostate cancer has not yet been accepted as cost-effective and long term survival benefits have not been shown. Nevertheless, some doctors request PSA testing in men who present with lower urinary tract symptoms (LUTS) to detect prostate cancer.

Objective: *To study for prevalence of prostate cancer in healthy men seeking medical check-up for prostate cancer.*

Material and Method: *During the anniversary celebration of Siriraj established day (26/07/1888), a cohort study of Prevalence of prostate cancer in aging males using PSA Screening Test was carried out, 200 men over 45 years of age were invited to PSA testing and prostate glands check-up including, IPSS (international prostatic symptoms score), QOL(quality of life score) and DRE (digital rectal examination). Patients with elevated PSA were advised to undergo transrectal-ultrasound-guided-biopsy of the prostate (TRUS-biopsy). Cancer detection rate was calculated according to symptoms described by patients, IPSS and age groups. Data was compared using Chi-Square test.*

Results: *Median values from data of men's ages, IPSS, QOL and PSA were 63 years, 11, 2, and 1.23 ng/ml, respectively. 9 of 200 patients (4.5%) were found to have prostate adenocarcinoma on biopsy. Most of the cancer cases showed a localized lesion. Prostate cancer was found more common in patients who described themselves as having abnormal urination. There was no prostate cancer found in patients with a mild degree of LUTS (IPSS less than 8). Prostate cancer tended to be more common in men with high IPSS.*

Conclusion: *Screening prostate cancer by PSA testing detected the cancer in 4.5 %. Most cancers were found on symptomatic patients. Patients with LUTS should be made aware of prostate cancer and PSA testing may be offered in such patients. However screening of prostate cancer in all men regardless of symptoms must wait for a larger study looking at long term survival benefit, cost-effectiveness of screening, and lastly, quality of life of patients on a screening program.*

Key words: *Prostate cancer, Prevalence, PSA, IPSS*

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Prostate cancer is a significant problem for men's health, especially in Western Countries. In the USA, prostate cancer is the most common malignancy among adults and the second most common cause of cancer death in men. In fact, prostate cancer accounts for approximately one third of new cancer cases in men[1]. After PSA (Prostate Specific Antigen) test has been available, the incidence of prostate cancer is rising particularly in the young[2]. At Siriraj Hospital, prostate cancer is the second leading cause of new cancer registration in male[3]. The trend continues to increase every year. This is possibly due to public awareness in health screening and the PSA test. However, prostate cancer is one of the malignancies for which the incidence varies widely across various parts of the world. High risk countries included the USA, Canada, Sweden, Australia and France. Low-risk countries included most of Asia[4]. A screening program for prostate cancer in low-risk countries such as Thailand can be more expensive than in high-risk countries. Tantiwong et al studied 928 elderly men. They found that prevalence of prostate cancer in Thai elderly men was 1.42% with 95%CI of 0.4%-2.5%. The authors were also looking at cost-effectiveness of screening for prostate cancer and recommended starting screening with digital rectal examination (DRE) seemed to be more cost-effective[5]. However, prostate cancer check-up using PSA is more common. Some urologists request PSA test in men with lower urinary tract symptoms (LUTS) to increase early detection of the cancer.

Public awareness for health has increased the use of the PSA test for early detection of prostate cancer. However, there is no data available in Thailand regarding prevalence of prostate cancer in Thai patients seeking medical check-up stratified by their symptoms and age groups. The present study reports the prevalence of prostate cancer stratified by symptoms and factors related to prostate cancer such as age, PSA and DRE.

Material and Method

From April the 25th 2005 to April the 29th 2005 at the Department of Surgery, Faculty of Medicine Siriraj Hospital, healthy men aged more than 45 years were invited to have a prostate glands check-up during the anniversary of Siriraj established day (26th of April 1888). All men were informed of prostate cancer and PSA test. Men who were interested in the screening campaign were advised to fill in an international prostatic symptoms score (IPSS) and a quality of life score (QOL). All patients were seen by Urologists and gave a verbal consent for PSA testing. Rectal examination and PSA testing were carried out. All men were counseled with IPSS, QOL and PSA results. Patients with elevated PSA of more than 4.0 ng/ml were advised to undergo transrectal-ultrasound-guided-biopsy of the prostate (TRUS-biopsy). Pathological reports were collected and descriptive analysis of symptoms and cancer detection rates were performed. Patients were classified based on their level of severity of LUTS using IPSS. Cancer detection rates were reported in percentages with 95% confidential interval (95%CI). Prevalence of cancer in each group was compared and statistical analysis was performed using Chi-Square test. PSA value was compared in each age group using Kruskal Wallis H-test. P value of less than 0.05 was defined as statistically significant difference.

Results

There were 209 healthy men interested in joining the program from the 25th to 29th of April 2005. Data of 200 patients from which PSA test was done were analyzed. Median data of ages, IPSS and QOL were 63 years, 11 and 2, respectively. Median PSA was 1.23 ng/ml (Table 1).

Of 200 patients, 50 patients described themselves as normal voiders, whereas 61 patients and 67 patients responded as uncertain and abnormal voiders, respectively.

PSA test was found abnormal (more than 4 ng/ml) in 36 cases (18%). Having been counseled, patients with abnormal PSA decided whether to undergo TRUS with prostatic biopsy. Of 36 patients with abnormal PSA, 26 (72.22%) agreed to proceed with TRUS-biopsy. There were 15 patients with abnormal DRE. 7 of these 15 patients had elevated PSA more than 4.0 ng/ml. Only 5 of these PSA-elevated patients agreed to proceed with TRUS-biopsy.

9 patients were found to have prostate adenocarcinoma on biopsy. Prostate cancer was found more common in patients who described themselves as

Table 1. Median values of Age, PSA, IPSS and QOL in studied population

	Median	[Min, Max]
Age (years)	63	[48, 81]
PSA (ng/ml)	1.23	[0.12, 194.7]
IPSS	11	[0, 32]
QOL	2	[0, 6]

having abnormal urination than in others (Table 2). Stratifying patients into severity of LUTS using IPSS, there was no prostate cancer patient with mild degree of abnormal urination (IPSS less than 8) as shown in Table 3. Median values of PSA and cancer prevalence were found increased in elderly men (Table 4, 5).

7 out of 9 patients with prostate cancer were found to have localized prostate cancer on routine clinical staging for the cancer. 2 patients already had advanced disease, and they were treated with hormonal therapy. Out of 7 patients with localized disease, 5 patients underwent laparoscopic radical prostatectomy, one patient underwent opened radical prostatectomy, and the other chose to wait and see.

Discussion

The incidence of prostate cancer at Siriraj Hospital has increased from 1.97% in 1998 to 4.68% in 2004[3,6,7]. This is probably due to life-style change, taking a high fatty diet, lack of exercises or stress. More importantly, the PSA test has much influence on the rising rate of cancer detection. However, screening for prostate cancer by PSA test in healthy men over 45 years of age is controversial.

Table 2. Number of cancer found stratified by urinary symptom described by patients

Patients described their symptoms as	Total No.	No. of cancer found	Prevalence %	95%CI	p-value
No abnormality	60	1	1.7	0.3-8.9	0.31*
Uncertain	61	3	4.9	1.7-13.5	
Abnormal urinary symptoms	67	5	7.5	3.2-16.3	

*Chi-Square Test

Table 3. Number of cancer stratified by IPSS

IPSS	Total No.	No. of cancer found	Prevalence %	95%CI	p-value
Mild (0-7)	51	-	-	-	0.10*
Moderate (8-19)	110	7	6.4	3.1-12.6	
Severe (20-35)	18	2	11.1	3.1-32.8	

*Chi-SquareTest

Table 4. Number of cancer found stratified age group

Age (years)	Total No.	No. of cancer found	Prevalence %	95%CI	p-value
50-59	65	1	1.5	0.3-8.2	0.27*
60-69	93	4	4.3	1.7-10.5	
70-79	37	3	8.1	2.8-21.3	

*Chi-Square Test

Table 5. Shows median values of PSA stratified by age group

Age (years)	Total No.	Median [Min, Max] PSA (ng/ml)	p- value
50-59	65	1.14 [0.23, 11.40]	0.059*
60-69	93	1.30 [0.18, 194.70]	
70-79	37	1.91 [0.123, 59.53]	

*Kruskal Wallis-H test

After PSA was introduced, there has been an epidemic shift toward early stage disease. Catalona et al reported a decrease in advanced prostate cancer among screened patients compared to those without screening[8]. Roehl et al demonstrated that more than 60% of prostate cancers in the PSA-era were clinical T1c tumors, whereas 70% of pre-PSA era tumors were clinical T2 or more[9]. Furthermore, the rate of incidence of distant metastasis has fallen by 50% within the last decade[10]. Generally speaking, prostate-cancer patients diagnosed at younger ages will also have earlier stage tumors. Carter et al studied the influence of age on the incidence of early stage tumors. They found that younger age was associated with a higher rate of curable cancer and decreased risk of cancer-specific mortality[11]. Smith et al also reported that younger age at diagnosis independently predicted a better prognosis[12].

A significant disadvantage associated with earlier detection of prostate cancer is that it may lead to the detection and treatment of indolent cancers. It was estimated that up to 30% of all cases of PSA-detected prostate cancers (T1c) were indolent[13]. PSA screening could lead to over-diagnosis and over-treatment of prostate cancers. Prostate cancer has a prolonged natural history. Death possibly occurs decades from the diagnosis, whether or not treatment is acquired. Albertsen et al showed that many prostate cancer patients died of non-prostate cancer without treatment[14]. In a large cohort study in 767 patients with localized prostate cancer who were treated with either observation or hormonal treatment, cancer mortality remained stable after 15 years of diagnosis. The study does not support aggressive treatment for localized low grade prostate cancer[15].

PSA screening for prostate cancer is still controversial. The advantages include early detection at younger ages and earlier stages with potential survival improvement. The disadvantages are increased detection of indolent tumors, over-diagnosis and over-treatment. In Thailand mass screening in all men who have no symptoms is not recommended, as there is no evidence that mass screening will improve survival in long term follow-up. Smith et al studied 18,608 men who had PSA screening test for prostate cancer. They found that 3,114 (17%) men had PSA more than 4 ng/ml. with a prevalence of prostate cancer of 3.25%[16]. In a recent publication, cancer detection rate was 3.9% in those 2,385 men who had PSA of more than 3 ng/ml from a screening program for prostate cancer[17]. In the present study cancer detection rate was 4.5% (9 of 200), which is similar to those previous studies[16,17].

PSA screening in symptomatic patients could be beneficial. In the present study prostate cancer was found in 1.7% of totally asymptomatic patients. Interestingly, cancer detection rate was increasing in symptomatic patients up to 7.5%. In the present study, in patients with mild symptoms (IPSS less than 8) no cancer was found. Although, the present findings had not reached statistically significant difference, the authors believed this could be due to the small number of patients being enrolled (type 2 error). Due to limitation of PSA- test kits available for the campaign, the authors were able to screen only 200 cases. It is the authors' belief that PSA test together with physical examination and routine laboratory tests could be offered in patients with more severe symptoms of LUTS. Patients who intended to undergo PSA testing should be informed of the advantages and disadvantages of the test, various causes of elevated PSA as well as accuracy rate of cancer detection.

Conclusion

At Siriraj Hospital, the prevalence of prostate cancer in healthy men seeking PSA screening test for the cancer was 4.5%. In the present study, prostate cancer detection in asymptomatic patients was 1.7%. Patients with moderate to severe lower urinary tract symptoms were found to have more cancer than those without symptoms or mild symptoms, although this did not show significant difference. PSA testing may be offered together with counseling to the patients with moderate to severe lower urinary tract symptoms. Screening of prostate cancer in all men regardless of symptom is not recommended at this stage, as lack of evidences of long term survival benefit, cost-effectiveness of screening, and lastly, better quality of life of patients on a screening program. A long term study with a large number of men enrolled will be required to answer these questions.

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รายงานความชุกของมะเร็งต่อมลูกหมากในชายไทยที่ได้รับการตรวจเลือด PSA (Prostate Specific Antigen) เพื่อค้นหามะเร็งต่อมลูกหมาก (โครงการเนื่องในวันคล้ายวันเกิดโรงพยาบาลศิริราช)

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มะเร็งต่อมลูกหมากเป็นปัญหาทางสาธารณสุขที่สำคัญ พบว่าอุบัติการณ์ของมะเร็งต่อมลูกหมากนั้นมีมากขึ้นเรื่อย ๆ การตรวจเลือดเพื่อหาค่า PSA (Prostate Specific Antigen) สามารถนำมาใช้สำหรับการตรวจเพื่อหามะเร็งต่อมลูกหมากระยะเริ่มต้น การใช้ค่า PSA เพื่อหามะเร็งต่อมลูกหมากระยะเริ่มต้นในผู้ป่วยที่ไม่มีอาการยังไม่เป็นที่ยอมรับโดยทั่วไป เนื่องจากอาจจะไม่คุ้มค่าใช้จ่ายและอัตราการอยู่รอดในระยะยาวของผู้ป่วยที่ได้รับการตรวจเลือดยังไม่เห็นเป็นที่ประจักษ์ ถึงกระนั้นก็ตามแพทย์ยังนิยมเจาะเลือดหาค่า PSA ในผู้ป่วยมีอาการผิดปกติของการถ่ายปัสสาวะเพื่อการวินิจฉัยมะเร็งต่อมลูกหมากในระยะเริ่มต้น

วัตถุประสงค์: *การศึกษาครั้งนี้ได้ศึกษาถึงอุบัติการณ์ของการเกิดมะเร็งต่อมลูกหมากในผู้ชายที่มีสุขภาพแข็งแรงและมารับการตรวจสุขภาพของต่อมลูกหมาก*

วัสดุและวิธีการ: *เนื่องในวันคล้ายวันสถาปนาโรงพยาบาลศิริราชซึ่งตรงกับวันที่ 26 เมษายน พ.ศ. 2431 ชายไทยอายุมากกว่า 45 ปีขึ้นไป จำนวน 200 คน ซึ่งได้รับการเชิญชวนและคำแนะนำในเรื่องของการตรวจเลือดเพื่อหาค่า PSA และทำการตรวจสุขภาพต่อมลูกหมาก ประกอบด้วย IPSS (International Prostatic Symptom Score), QOL (Quality of Life) และการตรวจทางทวารหนัก ผู้ป่วยที่มีค่า PSA สูงกว่าปกติ จะได้รับคำแนะนำให้รับการตรวจชิ้นเนื้อของต่อมลูกหมากดูว่ามีมะเร็งหรือไม่ ผลทางการตรวจทางพยาธิสภาพของต่อมลูกหมากได้นำมารวบรวมและทำการศึกษาดูถึงอัตราการตรวจพบมะเร็งต่อมลูกหมากในกลุ่มผู้ป่วยที่มีอาการความผิดปกติของการถ่ายปัสสาวะในระดับความรุนแรง และช่วงอายุต่างๆ กัน*

ผลการศึกษา: *ค่ามัธยฐานอายุของผู้เข้าร่วมโครงการ, IPSS, QOL และค่ามัธยฐานเฉลี่ยของ PSA มีค่าเท่ากับ 63 ปี, 11, 2 และ 1.23 ng/ml ตามลำดับ ในผู้ป่วยจำนวน 200 คน พบว่ามีผู้ป่วยจำนวน 9 คน ที่ตรวจพบมะเร็งต่อมลูกหมากจากการทำ Biopsy ผู้ป่วยส่วนใหญ่จะเป็นโรคมะเร็งอยู่ในระยะเริ่มต้น ทั้งนี้ผู้ป่วยที่มีมะเร็งต่อมลูกหมากนั้นจะมีอาการของการขับถ่ายปัสสาวะผิดปกติ นอกจากนี้ยังไม่พบผู้ป่วยที่เป็นมะเร็งต่อมลูกหมากรายใดเลยที่มีค่าความผิดปกติของการถ่ายปัสสาวะไม่มากนัก (IPSS < 8), จากการศึกษาตรวจพบว่ามีมะเร็งต่อมลูกหมากมีแนวโน้มเพิ่มขึ้น ในผู้ป่วยที่มีอาการการถ่ายปัสสาวะผิดปกติที่รุนแรงขึ้น แต่ไม่สามารถแสดงถึงความแตกต่างเมื่อใช้เครื่องมือทางสถิติมาคำนวณได้ (p = 0.10)*

สรุป: *จากการศึกษาครั้งนี้พบว่าการตรวจพบมะเร็งต่อมลูกหมากในผู้ป่วยที่เข้ารับการตรวจสุขภาพต่อมลูกหมากมี 4.5% โดยที่จะพบว่าผู้ป่วยที่เป็นมะเร็งนั้นจะมีอาการของการถ่ายปัสสาวะที่ผิดปกติแล้ว ดังนั้นการตรวจเลือดเพื่อหาค่า PSA อาจจะมีประโยชน์ในผู้ป่วยที่มาพบแพทย์ด้วยอาการการขับถ่ายปัสสาวะที่ผิดปกติ โดยก่อนเจาะเลือดแพทย์ควรจะให้คำแนะนำถึงข้อดีข้อเสียของการตรวจเลือดดังกล่าว อย่างไรก็ตามการตรวจเลือดเพื่อหามะเร็งต่อมลูกหมากในระยะเริ่มต้นโดยใช้ค่า PSA ในผู้ป่วยทุกรายที่ไม่มีอาการต่อมลูกหมาก ควรรอผลการศึกษาในระยะยาวในจำนวนผู้ป่วยที่มากขึ้นของการทำ screening เพื่อหามะเร็งต่อมลูกหมากโดยจำเป็นต้องศึกษาถึงผลของการอยู่รอดในระยะยาวของผู้ป่วย, ความคุ้มค่าของการทำการตรวจ screening ดังกล่าว และศึกษาถึงคุณภาพชีวิตของผู้ป่วยในระยะยาวด้วย*