

Interests in the use of Rapid Prostate Antigen Screening Test in the North-Cameroon

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Abstract: *Introduction:* The number of prostate cancer detected late because of the lack of means of investigation allowing a proximity screening, the poverty which characterize north are the two main elements which led us to lead this study which had for objective to shown the value of using rapid PSA screening tests.

Method: We conducted a cross-sectional analytical study in the city of Ngaoundere and Garoua for a period of 5 months.

Results: A total of 220 PSA level assays were performed over the 5-month period of our study with variations between the two selected centers. Of 30 samples used to study the sensitivity of rapid PSA screening tests, 22 were positive and 8 negative. The concordance rate for the positive values of the rapid test strip test versus the assay was 100%. The concordance of negative values was 87.5%. In addition, in a sample of 41 patients, PSA tests were performed in 30 patients, or 73.17%, and diagnosed prostate cancer in 69.23% of diagnosed cancer cases.

Conclusion: Rapid PSA screening tests are good tools for diagnosing prostate cancer when combined with other tools such as digital rectal examination and ultrasound.

Keywords: Cancer, prostate, Cameroon, PSA rate, RDT.

INTRODUCTION

In 2015, according to WHO, cancers are responsible for more than 8.8 million deaths worldwide, with nearly 70% of these deaths occurring in low- and / or middle-income countries. The most deadly cancers here being in humans are lung colon and prostate cancers [1]. Many diagnostic techniques exist for cancers, but as well these techniques are performing as well the costs allocated to their achievement are important. As a result, developing countries are left behind and exposed to an increase in the cancer mortality rate. The most fatal cancer among man is PCa that is sparsely supported by governments in developing countries because of the high costs and complexity of the techniques involved in its diagnosis. Although at age of 70 years-old, 80% of men develop prostate cancer, not all are detected quickly because of the slow and asymptomatic development of some of them [2]. Nevertheless, prostate cancer is the cause of cancers whose mortality and morbidity can be reduced by early screening. In fact, 30% of cancer-related deaths can be prevented by adequate investigations and controls of strategies based on early detection, and thereby significantly improve the chances of cures for

patients [3-5]. In the case of prostate cancer, one of the early screening tools is Prostate Specific Antigen (PSA) [4, 6-8]. In recent decades, PSA has proven to be one of the essential elements for the early diagnosis of prostate cancer [6, 9, 10]. Its use by low- and middle-income countries can reduce the mortality rate of prostate cancer. Otherwise, to reduce costs and improve accessibility to PSA-based screening techniques, PSA-sensitive test strips have been developed [11]. Thus, the use of these strips in the northern Cameroon which is the poorest area of the country with a poverty rate of nearly 70% despite a population representing 34% of the national population, the lack of centers specialized in the diagnosis and management of prostate cancer; will reduce the mortality rate for prostate cancer, which is 23% for all cancers [12-14]. The purpose of our work was to evaluate the use of PSA in the north, to test the sensitivity of PSA test strips, and to evaluate the involvement of PSA in the diagnosis of prostate cancer.

METHODS

It is a prospective cross-sectional and analytical study. It was carried out in the city of Ngaoundéré in the Adamawa region and that of Garoua for a period of 5 months. We selected for this study any patient who was the subject of anatomopathological study of prostatic tissue and those who had the examination to

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perform a total PSA assay. The data were collected analyzed using a questionnaire installed on the Microsoft Excel 2013 software. The use of the tools of computation of the descriptive statistics by calculations of the frequencies, averages, medians allowed us to obtain our results. The graphics and tables were made using the Microsoft Word version 2013 software.

RESULTS

a) Evaluation of PSA Achievement Rate

In all, 220 patients in total were included in this study. Of these 220 patients, 15 or 6.82% came from Norwegian Hospital (HN) Ngaoundere and 205 cases or 93.18% of the CPC Annex Garoua (CPC-AG). The average of age were 62,72 years for a minimum of 28 years and a maximum of 90 years. Similarly for HN and CPC-AG, the average of the PSA assays was 168,116ng/ml for a minimum of 0.07ng/ml and a maximum of 10000ng/ml. The frequencies and dosing numbers of PSA is higher at CPC-AG. Dosage costs were 13000 and 15000 FCFA depending on the center where the examination is carried out (Figure 1 and Table 2).

b) Results of the Evaluation of Rapid Screening Tests

The total number of samples used was 30. We obtained a total of 22 positive tests (the PSA detectability threshold was 4ng/mL) and 8 negative tests (the threshold value below 4 ng / mL). The concordance rate for the positive values of the rapid test on test strips compared to the assay was 100%. The concordance of negative values was 87.5%. The average age of the patients tested was 66.73 years for

a minimum of 41 years and a maximum of 89 years. PSA rates ranged from a low of 0.70 to a high of 7998 with an average of 280.040 (Table 1).

Table 1: Rapid Screening Test Results

Effective	POSITIVE TESTS		NEGATIVE TESTS	
	23		07	
	Ages	PSA	Ages	PSA
average	69,33	364,66	61	2,027
Minima	41	3,83	45	0,7
Maxima	87	7998	89	2,92
Median	67	10,12	55	1,89

c) PSA Assays for the Diagnosis of Prostate Cancer

In a sample of 41 patients who had undergone a pathological study of prostate tissue in our study, PSA measurements contributed to the diagnosis of prostate cancer in 69.23% of cases. These PSA assays were performed in 30 patients, or 73.17% of cases, the average of TPSA were 36.47ng/ml for a minimum of 4.82ng/ml and the maximum of 450ng/ml. In all cases the PSA test was always associated with a rectal examination.

DISCUSSION

The results of the study that we conducted show a clear variation in the use of the PSA assay according to the two centers represented. This variation is due to the notoriety of one of the centers that has been needed for decades as a reference in the north in terms of carrying out biological tests including the

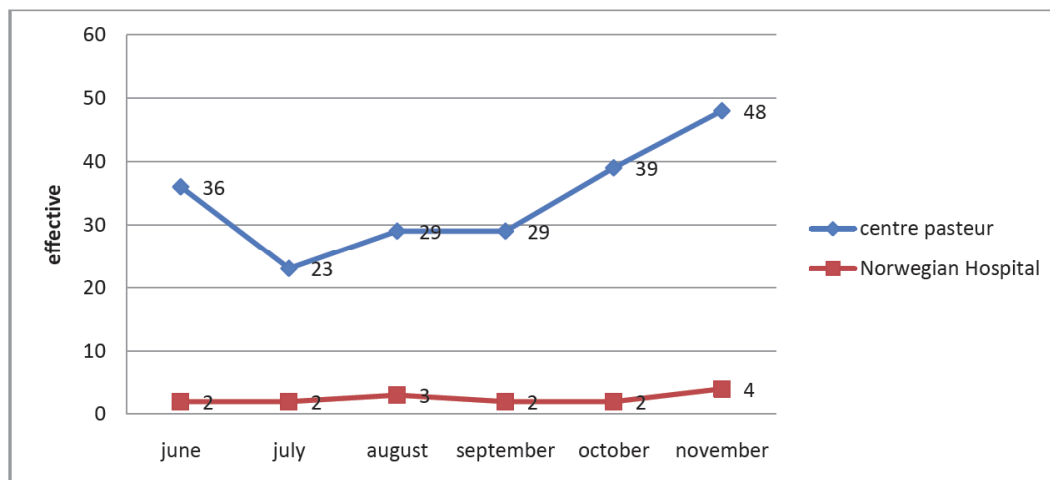


Figure 1: Number of PSA performed per month.

Table 2: Variations in TPSA and Age

Ages Intervals Effective	< 40		[40-49]		[50-59]		[60-69]		[70-79]		>= 80	
	4		17		48		54		32		18	
	âges	PSA	âges	PSA	âges	PSA	âges	PSA	âges	PSA	âges	PSA
averages	30,05	1,418	45,353	4,457	54,938	6,65	63,94	99,55	73,563	407,22	83,94	569,12
Minima	28	0,25	41	0,54	50	0,07	60	0,2	70	0,37	80	1,55
Maxima	34	3,26	49	23,79	59	79,51	69	3263,6	79	10000	90	4722
Median	30	1,08	45	1,17	55	1,77	65	6,65	73,5	9,63	84	13,9

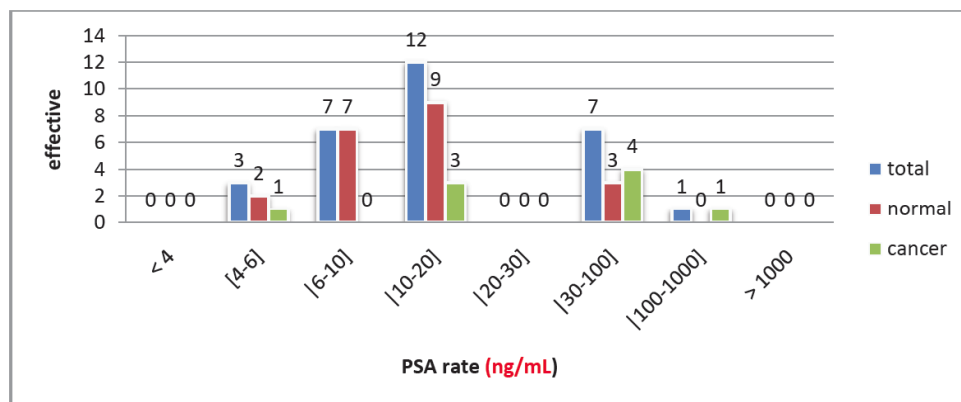


Figure 2: Presentation of TPSA values.

assay of PSA. Moreover, the different variations of the age of the patients shows us that the dosage of this one can be used as well for the follow-up of the PCa as for all the other pathologies having a direct incidence on the function of the prostate gland [15, 16].

The results shown above in Table 2 show a gradual increase in mean PSA levels, depending on the age groups of the patients. This increase can be explained simply by the fact that the rate of PSA goes naturally increasing according to the age; as well as the fact that prostatic pathologies most often reach the elderly with a significant increase in PSA incidence. In addition, the use of PSA sensitive test strips was able to show in this study a good sensitivity observed by the different concordance rates for positive and negative values. Added to this, our study shows a significant implication of the PSA assay in the diagnosis of PCa of the order of 69,23%. Thus, according to Bruno Baudi's statements in his article (2015), we can therefore justify and recommend the use of TDR / PSA for the diagnosis and monitoring of prostate cancer in remote areas because of its specificity and its low cost [11].

CONCLUSION

Rapid PSA screening tests due to their lower cost, ease of completion, and high sensitivity; are very good

tools that can support the diagnosis of prostate cancer. Moreover, when the uses of PSA screening tests are associated with TR, the chances of detection of PCa are very high.

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Received on 14-04-2018

Accepted on 25-04-2018

Published on 26-07-2018

<https://doi.org/10.6000/1927-7229.2018.07.03.2>