DETERMINATION OF PSA REFERENCE LEVEL FOR COMMON PROSTATIC DISEASE PATIENTS IN SUDAN

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Abstract:*This study aimed to determine the reference prostate specific antigen (PSA) range for different types prostatic disease patients in Sudanese men,A total of 50 patients, age ranged from 46-96 years with various types of prostatic disorders were enrolled into this study. The analyses included patients referred to RIA lab at RICK ,a biopsy was taken in those to exclude prostate cancer. The collected data included: PSA amount, diagnosis, habits, Age, residence and Races (tribe). The collected data analyzed using EXCELL software and statistical package for social science SPSS in forms of 3D clustered column and curves.Out of the results enumeration for this study which deals with assessment of prostate specific antigen (PSA) level among prostatic disease patients The common type of prostatic disorders was the adeno-carcinoma (84%), state which had a high incidence of prostatic disorders was the north state 42%,habit associated with prostatic disorders patients was the smoke (42%), age group with high PSA level was (56-66) years with relative level 80.7 ng/ml, histopathological had a high mean of PSA level was adinocarcinoma with relative level 56.1 ng/ml.These results indicated the possible use of PSA to determine the reference prostate specific antigen (PSA) range for different type's prostatic disease patients in Sudanese men,The government should establish many (RIA) laboratories in different ,encouraging the national research to reveal the relation between multi delivery and prostate disorders incidence .*

Key words: *Prostate Specific Antigen, Benign Prostatic Hyperplasia, Prostate Cancer, Sudanese*

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INTRODUCTION

The prostate specific antigen (PSA) is a protein (Tumor marker) produced by certain cells in the prostatic gland that liquefy the semen (Wang et al, 1981).Most of the PSA produced by the prostatic gland is carried out of the body in semen but a very small amount escapes into the blood stream. PSA circulated in blood stream freely or it can join with other substances in the blood as bound PSA. Total PSA is the sum of free and bound forms. This is what is measured as the standard PSA test. A test for PSA may be used to screen for cancer of the prostate and to monitor treatment of the disease.The abnormal amount of PSA level in blood stream indicates for Infection of the prostate or inflammation of prostatic tissues (prostatitis), prostate adenocarcinomas, benign hyperplasia (BPH) (enlargement of the prostate), age, and race relative to normal range which is in the range of 0 – 4.0 (ng/ml) (Jama,1997).The

measurement of PSA could be carried out by PSA blood tests combined with a rectal examination (DRE), a urine test may be used to detect a urinary tract infection or blood in the urine, (laboratory), PSA screening test for early detection of prostate cancer (such as ultrasound, x-rays or cystoscopy) andRadio-immunoassay for PSA level.False positive test results (also called false positives) occur when the PSA level is elevated, but no cancer is actually present, False negative tests: False negative test results (also called false negatives) occur when the PSA level is in the normal range even though prostate cancer is actually present, biopsy of the prostate gland The biopsy will determine if cancer or other abnormal cells are present in the prostate. However there are some methods preferable than others based on monoclonal antibody technologysuggest that men younger than age 50 should have a PSA level below 2.5 ng/ml, while a PSA level up to 6.5 ng/ml would be considered normal for men in their 70s years old (Brawer, 1998).

The PSA is varied among the people based on their races, environmental modification lifestyle and nutritional habits .such variability in PSA level could influence the diagnostic finding whether it has been determined by RIA or laboratory test which in turn could affect the treatment policy. The increment or decrement of PSA is associated with certain symptoms and signs in addition to physiological disorders such as infection of the prostate or inflammation of prostatic tissues (prostatitis), prostate adenocarcinomas, benign hyperplasia (BPH) enlargement of the prostate (Ruijter et al., 1999). In Sudan, commonly PSA being determine by using laboratory technique relative to other methods and that for many reasons, because laboratories are available and cheaper than other methods but the researcher would like to apply RIA which is assume to be due to relative accuracy. The mechanism by which the PSA increases or decreases is associated with the cell proliferation (Hugosson et al, 2004). Different parameters could affect the level of PSA such as environment, age, races, habit and deities hence they influence the diagnostic results. Also different diseases could have various level of PSA among Sudanese population. In addition to the application of other technique for assessing the PSA level in different regions of Sudan.

This study aimed to determine the reference PSA range for different types of diseases in Sudan

METHODOLOGY

The study area carried out in RIA lab at RICK with sample size of 50 patients. The collected data included: PSA amount, diagnosis, habits, Age, residence and Races (tribe). The collected data analyzed using EXCELL software and statistical package for social science SPSS in forms of 3D clustered column and curves

Method and procedure

The I^{125} labeled signal-antibody binds to an epitope of PSA molecule different from that recognized by the unlabeled capture-antibody, the tow anti-body react with the PSA molecule forming a "Sandwish". Standard and samples are incubated with amixture of the anti-body at room temperature , at the end of 2 hours incubation period (no need of a shaker) , magnetic immunosorbent (MIS) is added in excess , MIS particles selectively bind the PSA signal anti-body capture , anti-body complex and settle out in magnetic field.A wash step is critical to reducing nonspecific binding to aminimum for increased low end precision Gammas counter use to measure the radioactivity of (MIS) from that the concentration of PSA can be determined.

RESULTS

Out of the results enumeration for this study which deals with assessment of prostate specific antigen (PSA) level among prostatic disease patients The common type of prostatic disorders was the adeno-carcinoma (84%), The common state which had a high incidence of prostatic disorders was the north state 42%,the common habit

associated with prostatic disorders patients was the smoke (42%)The common age group with high PSA level was (56-66) years with relative level 80.7 ng/mlThe common type of histopathological had ahigh mean of PSA level was adinocarcinoma with relative level 56.1 ng/ml

The following results shows related to PSA among prostatic disorders patients, their ages, habits, type of diagnosis, states of Sudan versus incidence, the mean of PSA level versus age and the diagnosis versus the relative PSA level.
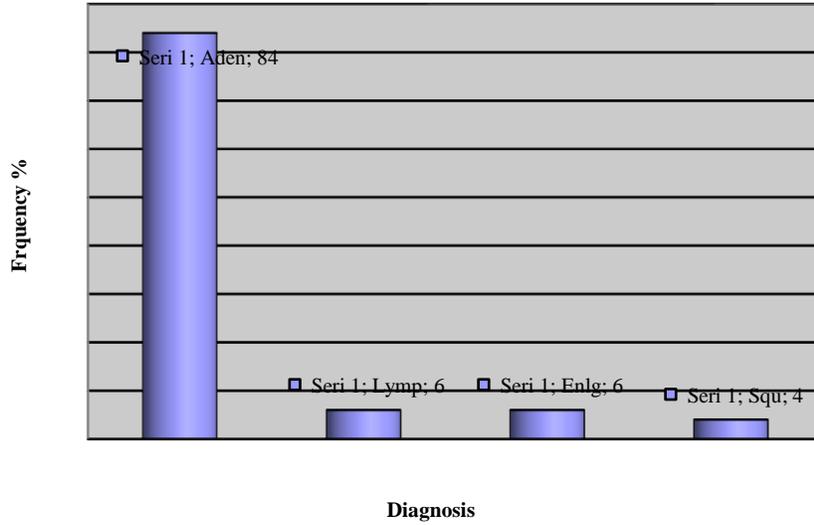

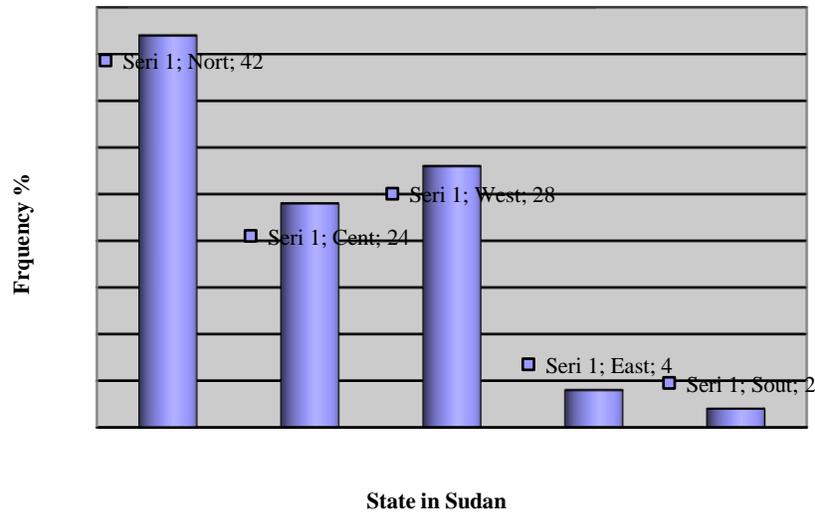**Figure 1:** shows the type of diagnosis and the relative frequency % for the prostatic disordered patients

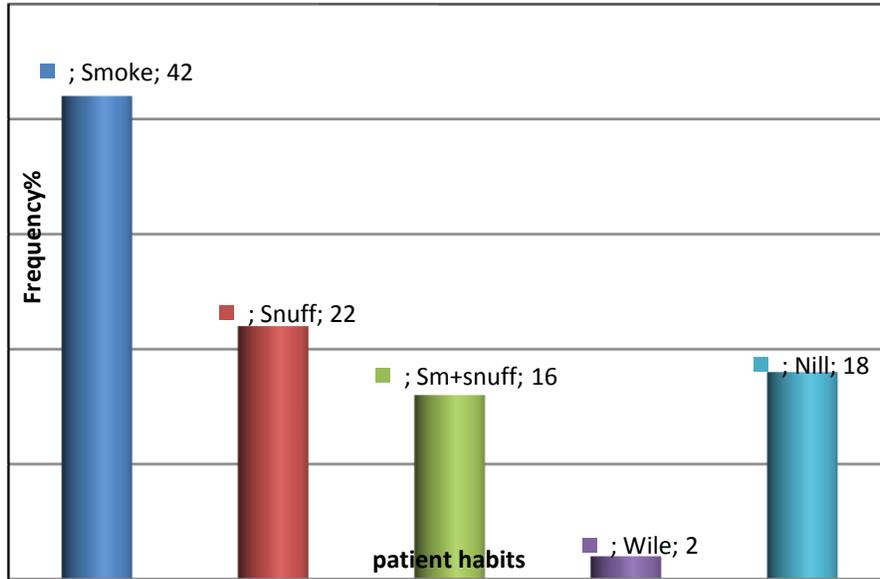**Figure 2:** shows the distribution of prostatic disorders in Sudanese states.

Figure 3: shows the frequency % of prostatic disorders patients with their habits
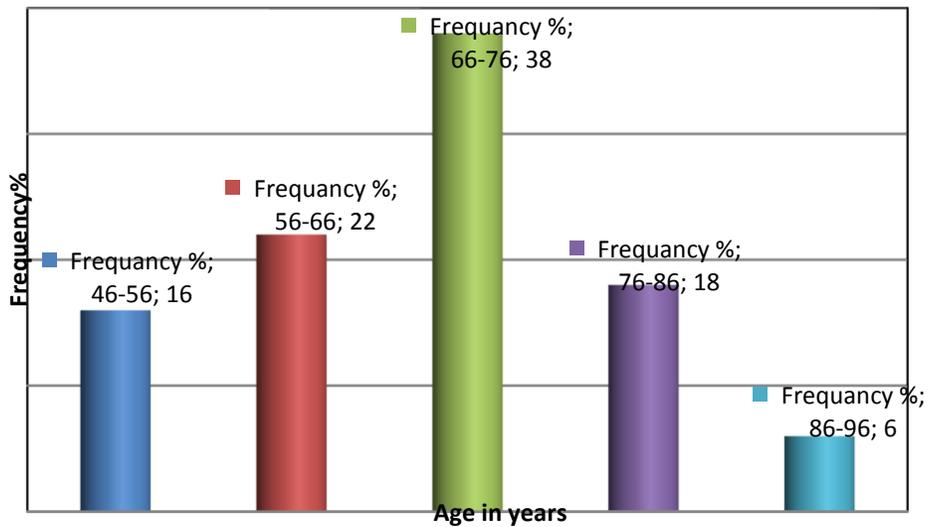

Figure 4 shows the frequency % of the age group involved with prostatic disorders
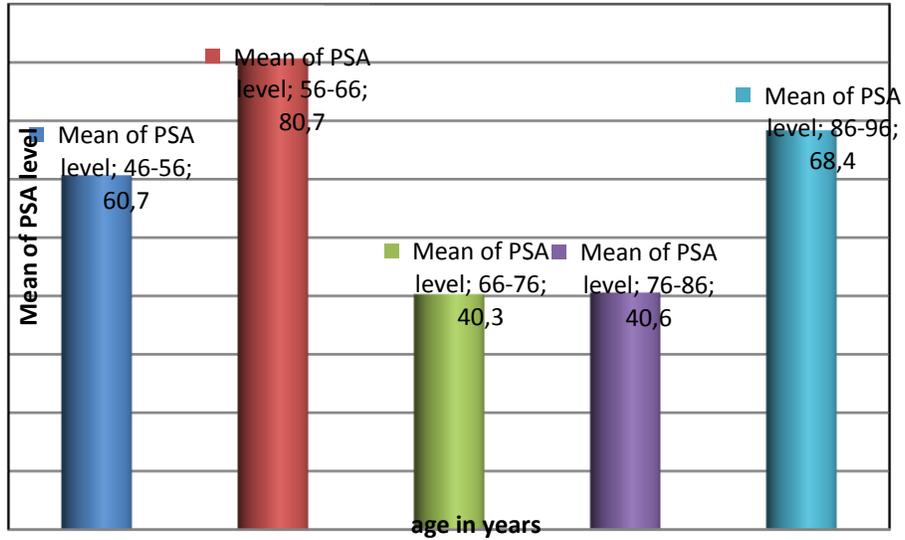
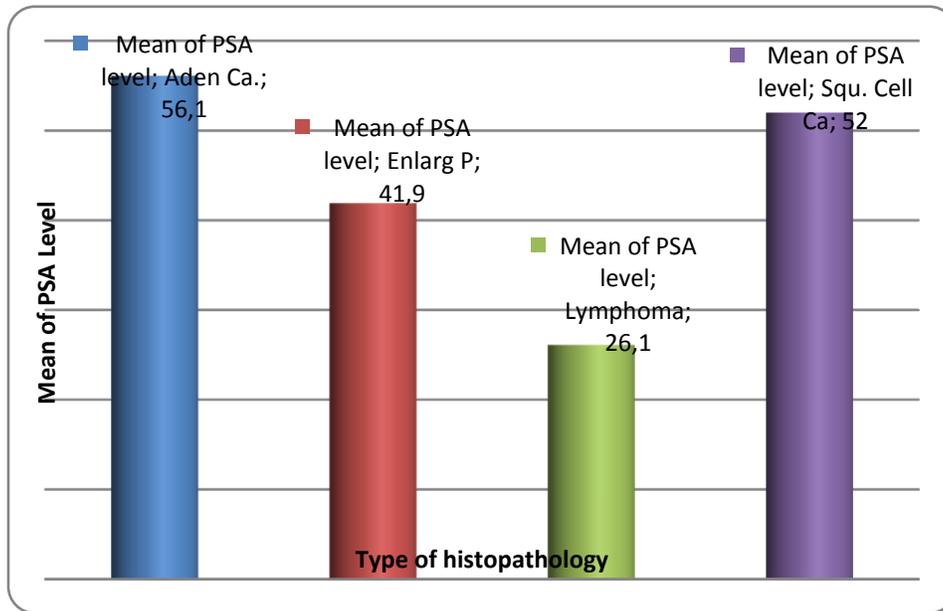Figure 5.5 shows the age groups and their PSA level among prostatic disordered patients

Figure 6 shows the level of PSA in mean versus relative histopathology

DISCUSSION

It reveals that the common type of prostatic disorders among the sample was the adeno-carcinoma which represents 84% while the lymphoma, enlarged prostate and squamous cell carcinoma were so rare. Figure 1 ,It reveals that the common state which had a high incidence of prostatic disorders was the north state which represents 42%,west state 28% and center state 24% while the east and south were so rare Figure 2. It reveals that the common habit among the patients was the smoke, which represents 42%. The snuff represent 22% and the patients who smoke and snuff represent 16%. While the wine habits was so rare and representing only 2% of the patients. However there were 18% of the patient with no blamed habits Figure 3.

It reveals that the frequency % increases as the age increased and the common age group involved with prostatic disorders was (66-76) years with frequency represent of 38% Figure 4. This study is in agreement with the study carried out by (Jemal et al, 2003) In the United States theprobability of being diagnosed with prostate cancer is only 1 in 19,299 for men younger than 40years, 1 in 45 for men aged 40 to 59 years, and 1 in 7 for men aged 60 to 79 year.

It reveals that the common age group with high PSA level among the sample was (56-66) years with relative PSA level 80.7 ng/ml Figure 5

It reveals that the common type of histopathology with high mean of PSA level was adinocarcinoma with relative level 56.1mg/l Figure 6.

Conclution: Out of the results enumeration for this study which deals with assessment of prostate specific antigen (PSA) level among prostatic disease patients the final concluded the common type of prostatic disorders among the sample was the adeno-carcinoma , common state was north state common habit associated with prostatic disorders patients was the ,the common age group with high PSA level was (56-66) years with relative level 80.7 ng/ml ,the common type of histopathological had ahigh mean of PSA level was adinocarcinoma with relative level 56.1 ng/ml , The government should establish many (RIA) laboratories in different states because of the PSA test are very necessary to detect the prostatic disorders. Encouraging the national research to reveal the relation between multi delivery and prostate disorders incidence

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