

Assessment of Prolactin Level Among Chronic Renal Failure Patients in Khartoum State

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Abstract: Prolactin (PRL) is a protein produced in the lactotroph cells of the anterior pituitary gland. It's like growth hormone increases in sleep, stress, pregnancy and Chest wall stimulation or trauma. Prolactin production can be stimulated by the hypothalamic peptides, thyrotropin-releasing hormone (TRH), and vasoactive intestinal peptide (VIP). Chronic Kidney Disease (CKD) is a major prevalent disease worldwide associated with low grade systemic inflammation that influences individuals to higher incidence of atherosclerotic complications. Both prolactin clearance and production are altered in CKD. The aim of the current work was to assess the serum prolactin level in Renal Failure or chronic kidney disease in order to acquainting endocrinologists with information of hyperprolactinemia in renal failure. This is a descriptive and practical study, conducted at different dialysis's centers in Khartoum state during May to October 2014. 106 patents (different ages) with symptoms of renal frailer had been selected for the study. 106 samples collected from patient in dialysis center to confirm that renal failure patient associated with hyperprolactinemia by collection 89 patient samples(60were males and 29 were females) and 17 controls, from different person with varies ages from 18 up to 50 years. In this study, samples of patients that the cause of their renal failure is hypertension were rejected. From the collected data, a descriptive and statistical analysis wascarried out, the histograms which include means, standard deviation and correlation coefficient. All the results give an idea that hyperprolactinemia exist renal failure patients. The results concluded that the prevalence of renal failure is higher in male by 2 fold, chronic renal failure significantly not change in prolactin level, whereas chronic renal failure female patients have higher prolactin level than male. The results of prolactin showed that there was insignificant different in main prolactin level of patient compared with control group that hyperprolactinemia exist in renal failure patients.

Keywords: Creatinine, Chronic Renal Failure, ELISA, EIA, Prolactin, Urea

1. Introduction

Chronic renal disease is mean slow loss kidney function over time, some time take month or years without notices or feel symptoms of disease [1]. Chronic kidney disease includes conditions that damage your kidneys and decrease their ability to keep you healthy by doing the jobs listed [2]. If kidney disease gets worse, wastes can build to high levels in your blood and make you feel sick [1-3]. You may develop complications like high blood pressure, anemia (low blood count), weak bones, poor nutritional health and nerve damage [4]. Also, kidney disease increases your risk of having heart and blood vessel disease. These problems may happen slowly

over a long period of time. Chronic kidney disease may be caused by diabetes, high blood pressure and other disorders [3]. Early detection and treatment can often keep chronic kidney disease from getting worse, when kidney disease progresses, it may eventually lead to kidney failure, which requires dialysis or a kidney transplant to maintain life [5].

Acute renal failure is the kidney suddenly loss their function sometimes due to poison, and may be treated by one or three time of dialysis [4]. In the last years the cases of renal failure is wide progressive in the World, and in the Sudan also take a big space, but the causes were not known for this cases progress, is it due to nutrition, water, nature, or else.

Prolactin (PRL) is a protein produced in the lactotrophcells

of the anterior pituitary gland. It's like growth hormone increase in sleep, stress, pregnancy and Chest wall stimulation or trauma [6]. Prolactin production can be stimulated by the hypothalamic peptides, thyrotropin-releasing hormone (TRH), and vasoactive intestinal peptide (VIP). The normal values of prolactin are less than 25ng/ml in female and less than 20ng/ml in male [7]. Several investigators examined the serum prolactin in patients with chronic renal failure and found it elevated [7, 8]. Hyperprolactinemia is the most common endocrine disorder of the hypothalamic axis its necessary to determination the causes in confirmed cases of hyperprolactinemia. Determination Of the cause involves careful history and examination, Laboratory tests and diagnostic. Hyperprolactinemia define as increase serum prolactin in plasma, due to hyperinsecretion, causes in pregnancy and others hypothalamic and pituitary disorder, medication use, hypothyroidism, chest wall injury, and chronic renal failure [9].

Clinical symptoms are amenorrhea, infertility, and galactorrhea in women and decreased libido and impotence in men. Dopamine agonists have become the treatment of choice for the majority of patients with hyper prolactinemic disorders. The goals of treatment are to normalize prolactin levels, restore gonadal function, and reduce the effect of chronic hyperprolactinemia [10].

In this work, the assessment of the serum prolactin level in Renal Failure or chronic kidney disease will carried out in order to acquainting endocrinologists with information of hyperprolactinemia in renal failure.

2. Materials and Methods

2.1. Sampling

This is a descriptive and practical study, conducted at different dialysis's centers in Khartoum state during May 2014 to October 2014. 106 patients of different ages with symptoms of renal failure had been selected for the study.

To fulfill the aim of this study the relation between prolactin level and chronic renal failure, sample collected from the 106 renal failure patients from different area and different age from 18-50 years. The patients with kidney disease due to high blood pressure are rejected. The sample of Blood Urea and Serum Creatinine levels was taken from the patient during dialysis in the dialysis centers in Khartoum State Hospitals (Omdurman, Khartoum and Bahary).

The samples collected took period time of about two months and the samples immediately were subjected to centrifuge in order to separate. Next, the serum was kept in plain container and then was stored in refrigerator.

2.2. Principle

The Prolactin (PRL) Enzyme Linked Immunosorbent

Assays (EIA) Test Kits is a solid phase enzyme immunoassay based on sandwich principle for the quantitative detection of PRL in human serum. The micro well plate is coated with streptavidin. During testing the immunoblotting takes place of the assay at the surface of amicroplated well through the interaction of streptavidin coated on the well and exogenously added biotinylated monoclonal anti-PRL antibody.

Upon mixing monoclonal biotinylated antibody, the enzyme-labeled antibody and a serum containing the native antigen, reaction will resulted between the native antigen and antibodies without competition or strict hindrance to form a soluble sandwich complex. However, if the specimen does not contain the native antigen, the complexes will not be formed. After initial incubation, the micro well plate is washed to remove unbound materials. Substance (A) and substance (B) are added and then incubated to produce a blue color, indicating the amount of the native antigen present in the specimen. Sulfuric acid solution is added to the micro well plate to stop the reaction of which produces a color change from blue to yellow. The color intensity, which corresponds to the amount of the native antigen present in the specimen, is measured with amicroplate reader at 450/630-700 nm or 450 nm. The absorbance of the specimen is then compared to a calibration curve to obtain the amount of the native antigen present in the specimen.

3. The Results

One hundred and six (106) subjects were enrolled in this study, 89 were diagnosed as chronic renal failure patients with edge from (18 to 45) years and also their causes of chronic renal failure (CRF) No Hypertensions, were included as case group, whereas 17 healthy apparently considered as control group. The samples collect from dialysis center to measure the prolactin by using (ELA) device. Figure 1 shows the statistical histogram of prolactin for the all patient (case and control) with standard deviation, while Figures 2 and 3 show the statistical histogram of prolactin for the patient gender and edge with standard deviation, respectively. It can be observed that the mean of prolactin in the male is less than the female mean. In contrast insignificant difference was observed when classified the groups according to age. In fact, the prolactin was higher in female clarify our finding of increase mean concentration of prolactin in female.

Table 1 shows the correlation factor of prolactin via creatinine and urea. From the table, it can be noticed that the person's correlation regression was positive correlation between creatinine and prolactin. On the other hand no correlation was noted between prolactin and urea, which may indicates that increase in creatinine causes the increase in prolactin level in chronic renal failure patient. In other words, that means the creatinine is importance sing for chronic renal failure diagnosis and affected to prolactin level.

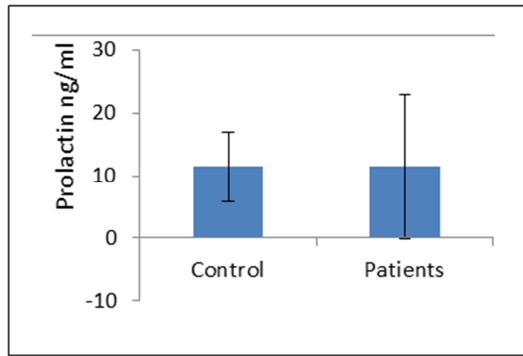


Figure 1. The statistical histogram of prolactin for all patients(case and control) with standard deviation.

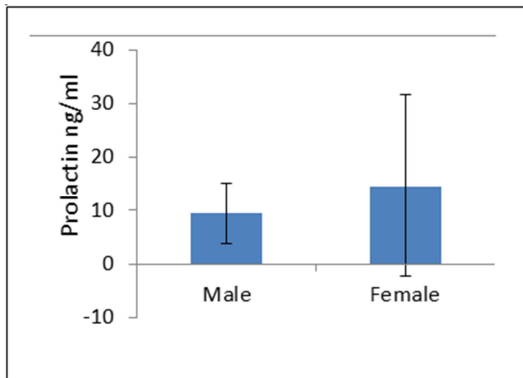


Figure 2. The statistical histogram of prolactin for the patient gender with standard deviation.

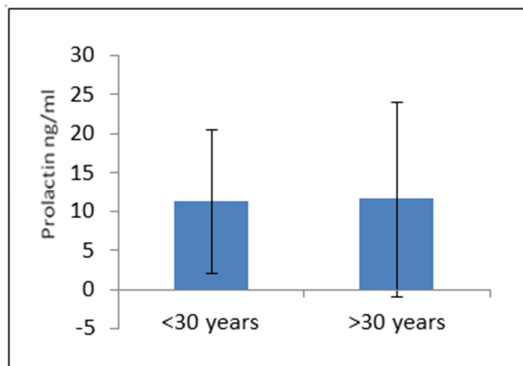


Figure 3. The statistical histogram of prolactin for the patient ages with standard deviation.

Table 1. The correlation factor of prolactin via creatinine and urea.

	Prolactin	
	Creatinine	Urea
Pearson Correlation (R)	0.276	0.016
Pearson Significant (P)	0.008	0.880

4. Discussion

Hyperprolactinemia is defined as a serum prolactin level above the normal range (25ng/mL in women and 15ng/mL in men). Previous studies evaluate the association between prolactin and chronic renal failure, but not yet the mechanism clearly understood [12]. Accordingly the present study conducted to assess the prolactin level among chronic renal

failure patients, which was concerned with increase of prolactin in renal failure or chronic kidney disease, acquainting endocrinologists with information of hyperprolactinemia in renal failure.

One hundred and six subjects were enrolled in this study, 89 who diagnosed as chronic renal failure patients were included as case group, whereas 17 healthy apparently considered as control group. The results of frequency showed that, 63 (70%) were males and 29 (30%) were females, indicate the prevalence of chronic renal is increase in male by 2:1 fold. The results of prolactin showed that there was insignificant different in main prolactin level of patient compared with control group. In contrast, the previous studies reported that there was association of hyperprolactinemia and chronic renal failure [13, 14]. From the results, it was noticed that the mean of prolactin in the control was less than the patients mean but the difference was insignificant. In addition, our results showed that the mean of prolactin in the male is less than the female mean. In contrast insignificant difference was observed when classified the groups according to age. In fact, the prolactin is higher in female clarify our finding of increase mean concentration of prolactin in female.

The person's correlation regression showed positive correlation between creatinine and prolactin and no correlation was noted between prolactin and urea, which indicate that increase in creatinine causes increase in prolactin level in chronic renal failure patient.

5. Conclusions

The assessment of the serum prolactin level in Renal Failure or chronic kidney disease was carried out in this descriptive and practical study. It can be said, generally, that the results gave an idea that hyperprolactinemia exist renal failure patients. The person's correlation regression showed positive correlation between creatinine and prolactin while no correlation was noted between prolactin and urea. This indicated that increase in creatinine caused the increase in prolactin level in chronic renal failure patient. The chronic renal failure was found to have higher prolactin level in female patients than male. The prevalence of renal failure was higher in male by two fold.

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