



Difference in the level of some reproductive hormones in AL- Najaf Al-ashraf province for chronic renal failure in male patients

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Abstract

Present study was conducted at Dialysis unit in Al-Sadder Medical City /Al-Najaf Al-Ashraf province during the period from July till November, 2012, wich aims to determined the effect of chronic renal failure on gonadal hormone in male by using 70 male patients divided into two groups 50 of them had chronic renal failure and the remaining (20) were normal healthy individuals served as a control group. The result of this study revealed that significant increased $P < 0.05$ in serum FSH 30.651 (U/L), renal failure patients compared with healthy group 9.363 (U/L). and significant increased $P < 0.05$ of serum LH concentration in renal failure patients 17.452 (U/L) as compare with HT group 6.185 (U/L). also the study showed significant increase $P < 0.05$ of serum PRL concentration in renal failure patients 29.779 (Ug/L) as compare with HT group 8.188 (Ug/L).

Introduction

Gonadal function is significantly affected in many acute and chronic systemic diseases such as kidney disease , As the function of the testes and the ovaries are determined by the integrity of the hypothalamic–pituitary–gonadal axis, it is obvious that a systemic disease may affect one or more levels of the axis in such a manner that the gonadal dysfunction may have various clinical and laboratory manifestations (Asterios and Faidon, 2005).

Kidney disease can cause physical and emotional changes that may affect on ours sex life. The chemical changes that occurs in the body with kidney disease affect hormones, circulation, nerve function and energy level. These changes usually lower sexual interest and/or sexual ability (National Kidney

Foundation, 2013). Endocrine abnormalities are a common feature of chronic renal insufficiency, changes of androgen synthesis and metabolism develop early after the onset of renal insufficiency and are likely to be caused by primary hypogonadism and/or disturbances of the hypothalamic–pituitary axis (Hedef and Maysaa, 2009).

Uremia affects local amino acid neurotransmitter outflow in hypothalamus, significantly affecting the release of GnRH and hence affecting gonadotrophin synthesis and secretion in males, the plasma LH level is elevated in hemodialysis patients compared to healthy controls (Schaefer et al., 2001), This increased level is due to prolonged half-life of immunoreactive and

bioactive LH as well as increased secretion of immunoreactive LH, similar to LH, FSH levels are normal to elevated in CKD, Serum prolactin level rise correlates with decline in glomerular filtration rate. Increase in serum prolactin levels is primarily due to decreased dopaminergic inhibition of

prolactin release from pituitary gland and secondarily due to decreased LHRH release (Manish and Raja., 2012). The aim of the present study was determine the effect of chronic renal failure on gonadal hormone in males.

Subjects and Methods

The study was conducted on 70 male patients divided into two groups 50 of them had chronic renal failure and the remaining 20 subjects were normal healthy individuals served as a control group. The patients were collected from the Dialysis unit in Al-Sadder Medical City/ Al-Najaf Al-Ashraf province during the period from July till

November, 2012. Blood samples were drawn by trained nurses or other health care professionals and freezing at -20°C to keep serum stable for a few months, Enzyme linked immune sarbant assay (ELISA) was used for the measurement of serum LH, FSH and PRL.

Automated Laboratory Methods

1. Serum LH estimation

This assay executed with specific elisa kit for test ,Supplied by (Immune - Biological Laboratories, IBL-America. RE52101).

2 . Serum FSH estimation

This assay executed with specific elisa

kit for test, supplied by (Immuno-Biological Laboratories, IBL-America. RE52121).

3. Serum PRL estimation

This assay executed with specific kit for test ,supplied by (Immuno-Biological Laboratories, IBL-America. RE52131).

The Result

1. Relation between FSH of renal failure patients and healthy group.

Figure (1) shows comparison between renal failure patients and healthy

group. This result revealed the significant increased $P < 0.05$ in serum FSH 30.651 ± 0.12 (U/L), renal failure patients compared with healthy group 9.363 ± 0.65 (U/L).

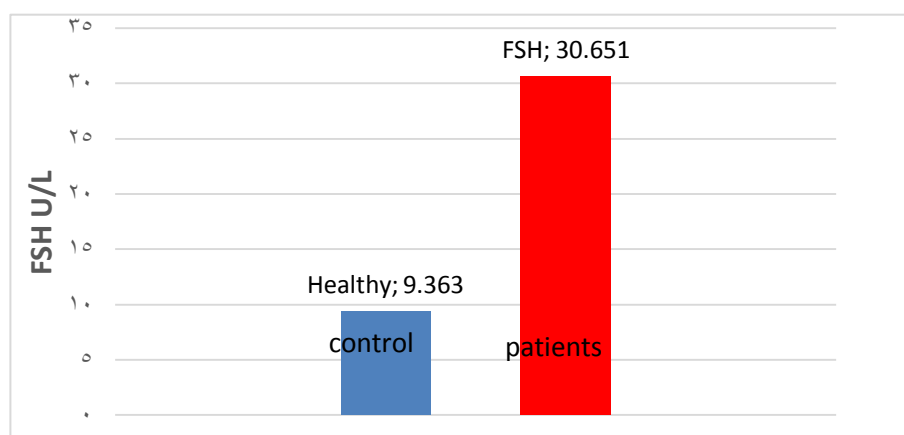


Figure :(1) comparison between FSH level of kidney failure and Healthy group.

2. Relation between LH of renal failure patients and healthy group.

The result in figure (2) shows comparison between renal failure patients and healthy group where as

significant increased $P < 0.05$ of serum LH concentration in renal failure patients 17.452 ± 0.22 (U/L) as compare with HT group 6.185 ± 0.43 (U/L).

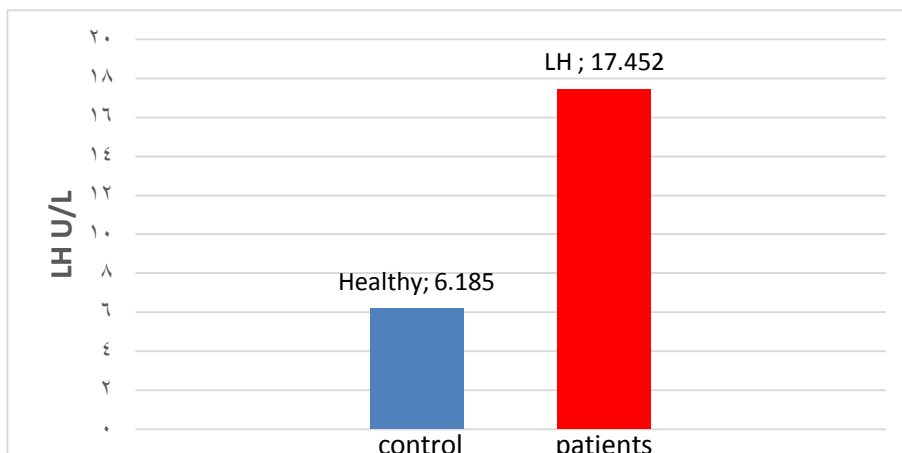


Figure: (2) comparison between LH level of kidney failure and Healthy group.

3. Relation between PRL of renal failure patients and healthy group.

The Result of figure (3) shows comparison between renal failure patients and healthy group where as

significant increase ($P < 0.05$) of serum (PRL) concentration in renal failure patients (29.779 ± 0.58 U μ g/L) as compare with (HT) group (8.188 ± 0.33 U μ g/L).

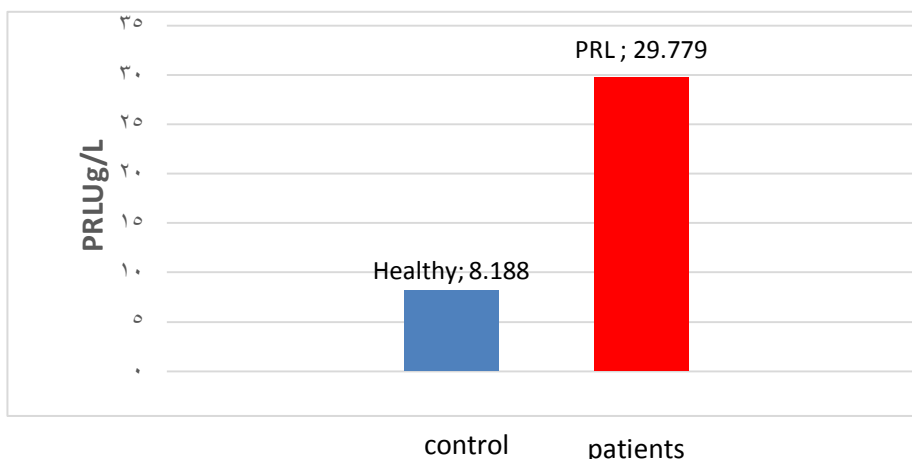


Figure :(3) comparison between PRL level of kidney failure and Healthy group.

The Discussion

The results of present study shown elevated level of LH, FSH and PRL hormones, this study in accordance with Alice etal., (2002); Hamoud etal., (2012) whose said that elevated serum level of LH ,FSH and PRL because of decreased metabolic clearance of this hormones and a circulating LH-receptor inhibitor was

suggested, which might contribute to Leydig-cell resistance and impaired feedback mechanism at the hypothalamic –pituitary level, Both LH and FSH are under control of gonadotropin releasing hormone (GnRH), but the control of FSH secretion is more complex since inhibin B, a hormone produced from testicles

which level is proportional to spermatogenesis, has a negative feedback effect on pituitary FSH secretion. Elevated FSH level, pointed towards the possibility that these patients had impaired spermatogenesis (Al-Khallaf et al., 2012).

Also BIFF (1999); Guang et al., (2010) reported that the excess LH secretion in this setting is thought to result from the diminished release of testosterone from the Leydig cells, since testosterone normally leads to feedback inhibition of LH release. Elevated FSH levels are probably the result of decreased testosterone and inhibin, a Sertoli cell product, The plasma FSH concentration tends to be highest in those uremic patients with the most severe damage to seminiferous tubules and presumably the lowest levels of inhibin.

The basal levels of serum prolactin are elevated in the majority of uremic patients, and the response to thyrotropin-releasing hormone (TRH) is reduced and delayed. The mechanisms for the hyperprolactinemia in chronic renal failure, Increased autonomous production rate of prolactin is a major mechanism for the hyperprolactinemia but decreased metabolic clearance rate may also play a

role also the state of secondary hyperparathyroidism of CRF may contribute to the increased production rate of prolactin, because PTH stimulates prolactin secretion the treatment of CRF patients with erythropoietin was associated with a decreased in serum prolactin levels (Mahboob and Shirin., 2011).

In other hand the angiotensin II (Ang II) system is also involved in the control of anterior pituitary hormone secretion, through affecting the secretion of releasing and inhibitory factors into the hypophyseal portal vessels. Ang II controls the release of LH and PRL (Marianne., 1992).

From all reasons Hedef and Maysaa, (2009); Nihal et al., (2008) who said that Patients with renal insufficiency show, from the onset of their disease, a pattern of hormonal changes resulting from complex disturbances at the hypothalamic, pituitary and gonadal level. The causes appear to be multifactorial, with clear contribution of comorbidities and therapy. This endocrine dysfunction can only partially be influenced by renal replacement therapy, such as hemodialysis or kidney transplantation.

Conclusions

In men with chronic renal failure sexual dysfunction is a common finding and prevalence, Impaired gonadal function

is prominent in uremic men, whereas the disturbances in the hypothalamic-pituitary axis are more subtle.

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التباين في مستويات بعض الهرمونات التكاثرية لدى الرجال المصابين بمرض الفشل الكلوي المزمن
في محافظة النجف الاشرف

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الخلاصة:

اجريت الدراسة الحالية في وحدة الغسل الكلوي التابعة لمدينة الصدر الطبية/ النجف الاشرف للمدة من شهر تموز ولغاية شهر كانون الاول للعام 2012 م. هدفت الدراسة لمعرفة تأثير مرض الفشل الكلوي المزمن على الهرمونات الجنسية لدى الذكور باستخدام (70) حالة من الذكور قسموا الى مجموعتين الاولى تتألف من (50) حالة يعانون من مرض الفشل الكلوي المزمن والثانية تتألف من (20) حالة لأشخاص ذوي صحة جيدة استخدمت كمجموعة سيطرة. اظهرت نتائج الدراسة زيادة معنوية ($P<0.05$) لمستوى هرمون FSH المصلي فكانت (30.651U/L) لأشخاص مصابون بالفشل الكلوي المزمن بالمقارنة مع مجموعة السيطرة والتي بلغت (9.363U/L) كما بينت نتائج الدراسة وجود زيادة معنوية ($P<0.05$) لمستوى هرمون LH للمجموعة المصابون بالفشل الكلوي المزمن حيث بلغت (17.452 U/L) بالمقارنة مع مجموعة السيطرة الاصحاء اذ بلغت (6.185±U/L). كما بينت النتائج وجود ارتفاع معنوي ($P<0.05$) لمستوى هرمون PRL للمجموعة المصابون بمرض الفشل الكلوي المزمن اذ بلغت (29.779± 0.58Ug/L) بالمقارنة مع مجموعة السيطرة التي بلغت (8.188 Ug/L).