EUROPEAN ACADEMIC RESEARCH
Vol. III, Issue 9/ December 2015

Impact Factor: 3.4546 (UIF)
DRJI Value: 5.9 (B+)

ISSN 2286-4822
www.euacademic.org

Evaluation of LH and prolactin hormone in Male Infertility in Sudan

NAZAR OMER AHMED BALA
Department of Clinical Chemistry
Faculty of Medical Laboratory Sciences
Al Neilein University, Sudan
YASIR HAMADN-ALLAH
Department of Clinical Chemistry
Faculty of Medical Laboratory Sciences
Al Neilein University, Sudan
HASHIM ELAMIN ELROUFAIE
Department of Clinical Chemistry
Faculty of Medical Laboratory Sciences
Al Neilein University, Sudan
NASR ELDIN M. A. SHRIF
Department of Clinical Chemistry
Faculty of Medical Laboratory Sciences
Alzaeim Alazhary University, Sudan

Abstract:

Background: *Infertility is defined as the failure of a couple to conceive after one year of regular unprotected intercourse. Infertility is a problem of global proportions. Several studies with questionable results have focused on the value of serum hormonal status of spermatogenesis in the testes. Also, possible relationship between seminal plasma inhibin B and spermatogenesis in patients with azoospermia.* ***Aim:*** *The aim of the present study is to compare some serum biomarkers of infertile men with normal fertile men to find the significant value of hormonal assay marker in predication of male infertility.*

Patients & Methods: *A cross sectional study in which samples were obtained from private clinic, from 11/ 2014 to 2-2012. Hundred subjects were participated in the present study (Ninty infertile men & ten fertile subjects). Semen parameters were measured*

for infertile men & control fertile men. Serum concentrations of LH & prolactin were measured.

Results: *There is significant (p< 0.01) reduction in sperm count, motility, viability of infertile men, as compared with same parameters of normal fertile men. Regarding serum LH levels, there was an increasing significant differences between infertile men [Oligpspermia and Azospermia] and normal fertile male (11,829 ± 5,57 mIU/ml, 13,335± 6,80 mIU/ml respectively) as compared with serum LH, and of fertile men (6,370± 1,98 mIU/ml [table 1].*

Regarding prolactin levels, there was asignifican differences between infertile men [Oligospermia and azospermia] and normal fertile males [16.29± 5,57 ng6.43/ml, 14.52± 8.031 ng 6.43/ml] [8.46 ± 4.85 ng/ml] respectively.[table 2] The present study show as in table 3, the mean of LH and prolactin hormone which appear high in infertile men who worked in hot climate and hard labor ship.

Conclusion & Recommendation: *The present study concludes that there is significant reduction in serum testosterone & AMH of infertile men as compare with fertile men. However, there is significant increase in serum FSH & LH in infertile men. There is negative correlation between AMH & serum testosterone in infertile men.*

Key words: Infertile men, semen analysis, LH, prolactin

INTRODUCTION

Infertility is defined as the failure of a couple to conceive after one year of regular unprotected intercourse. Infertility is a problem of global proportions. The infertility rates vary between countries and from region to region (1). It is documented that around 15% of married couples are infertile and that approximately 50% of infertility is due to male factor (2).

Evidence now suggests that reactive oxygen species (ROS)-mediated damage to sperm is a significant contributing

pathology in 30–80% of cases (3). A few years ago, concern has been expressed about the generation of ROS in the male reproductive tract. This is because ROS, at high levels, are potentially toxic to sperm quality and function (4). Also, additional reports have indicated that high levels of ROS are detected in semen samples of 25% to 40% of male infertility men (5-7).

Several studies with questionable results have focused on the value of serum hormones predict the status of spermatogenesis in the testes. Also, possible relationship between Lh and spermatogenesis in patients with azoospermia, (8-9-10).

Hyperthyroidism has been found to cause oligozoospermia, asthenozoospermia, abnormal sperm morphology, or occasionally infertility in males, (11).

Exposure to excess glucocorticoids either endogenously or exogenously can result in decreased spermatogenesis. Elevated plasma cortisone levels depress LH secretion and induce secondary testis failure, (12).

Elevated prolactin usually results in decreased LH, and testosterone levels and causes infertility. Associated symptoms include loss of libido, impotence, galactorrhea and gynecomastia, (12-13).

The aim of the present study is to compare some serum biomarkers of infertile men with normal fertile men to find the significant value of hormonal assay as a marker in predication of male infertility.

PATIENTS AND METHODS

A cross sectional study in which samples were obtained from private clinic, from 11/ 2014 to 2-2015. Information from the infertile men was obtained before semen analysis.

Hundred subjects were participated in the present study (Ninty infertile men & ten fertile subjects). Semen parameters were measured for infertile men & control fertile men. Serum concentrations of LH & prolactin were measured. All men were given clear instructions regarding the accurate semen collection to minimize error. They were asked to avoid sexual intercourse for 3 days. Semen parameters were measured for infertile men & control fertile men.

Blood samples were obtained from the patients and control. Then blood in the plain tubes was allowed to clot at room temperature (25 °C) for 1 hour. After that centrifugation was done at (3000) rpm for 3 minutes to separate the serum. The serum was transferred by micropipette and divided into 5 equal fractions in 5 test tubes, one fraction for each hormonal assay. The sera were stored at -20 °C until the assay was done. The subjects considered infertile according to WHO criteria, (14).

Serum concentrations of LH & prolactin were measured using The hormonal assays were done by full automated AIA 360 [TOSOH] using the kits (15). 10 ml fresh blood sample was aseptically collected from ante cubital vein of each subject, transferred into a clean plain labeled tube, allowed to clot, and then centrifuged at 6000 rpm for 5 minutes at room temperature. The clear serum was separated and kept at 20 °C till assayed.

Statistical analysis done by using unpaired student T test. All data are present as a mean & standard deviation (SD). Pearson correlation and unpaired T-test was used. P- Value $\leq$ 0.05 was considered significant throughout the study.

RESULTS

A ninety infertile male with age ranging from 25-60 years and 10 normal fertile males with age ranging from 36-50 years were

participated in this study. There is significant ($p< 0.01$) reduction in sperm count, motility, viability of infertile men, as compared with same parameters of normal fertile men. Regarding serum LH levels, there was an increasing significant differences between infertile men [Oligpspermia and Azospermia] and normal fertile male (11,829 ± 5,57 mIU/ml, 13,335± 6,80 mIU/ml respectively) as compared with serum LH, and of fertile men (6,370± 1,98 mIU/ml [table 1].

Regarding prolactin levels, there was asignifican differences between infertile men [Oligospermia and azospermia] and normal fertile males [16.29± 5,57 ng6.43/ml, 14.52± 8.031 ng 6.43/ml] [8.46 ± 4.85 ng/ml] respectively.[table 1] The present study show as in table 3, the mean of LH and prolactin hormone which appear high in infertile men who worked in hot climate and hard labor ship.

There was no statistical relationship between LH hormone of control and test group considering spem count [$p= 0.45$]

There was no statistical relationship between LH hormone of control and test group considering occupational status [$p= 0.31$]

There was a significant statistical relationship between prolactin hormone of control and test group considering spem count [$p= 0.03$]

There was no statistical relationship between prolactin hormone of control and test group considering occupational [$p= 0.21$]

DISCUSSION

In the present study, there is significant ($p< 0.01$) reduction in sperm count, motility, viability of infertile men, as compared with same parameters of normal fertile men. These semen

parameters reflects the presence of male infertility, because all the above value are below the normal accepted values (13).

Elevated prolactin usually results in decreased LH, and causes infertility, (13). In the present study, regarding serum prolactin, there is significant differences between infertile men as compare with control fertile men.

The pattern of hormonal abnormalities that was found in the present study runs in line with that of hypogonadism. There is elevation of sserum LH values as a result of the negative feedback mechanism of the hypothalamic-pituitary-gonadal axis, (14).

Also, there is significant difference in serum Prolactin was found among infertile & control men. This point out to an important findings that serum hormones (FSH, LH, Testosterone and Prolactin) should not be requested routinely for every infertile men. Instead, they should be sent semen analysis for many times, then only in cases of azoospermia, moderate to sever oligozoospermia (< 10 million/ml) or when there is clinical indication.

In present time & in Sudnese community, hormonal assays are not always available in every hospital and clinicians usually send infertile men to private laboratories in which the hormonal assays are expensive & inaccurate due to the presence of different methods of measurements.

So, this study stresses on proper selection of patients with respect to hormonal assays which reduces the costs and burden on the infertile patients.

REFERENCES

1-Wiersema, N.; Drukker, A. and Dung, M. Consequences of infertility in developing countries: results of a questionnaire

and interview survey in the South of Vietnam. J. Trans. Med. 2006; 4: 54.

2-Mossa M. Marbut, Azzawi M. Hadi, Dekhel H. Hadri. Ginger as a single agent in treatment of male infertility. Tikrit Medical J. 2011; 17(1): 1-5.

3-Chaudhury K, Dast,Chakravarly B & Bhattacharyya A. Acrosin activity as a potential marker for sperm membrane characteristics in unexplained male infertility. Fertile. Steril. 2005; 83(1): 104-109.

4-Mossa M. Marbut, Azzawi M. Hadi, Dekhel H. Role of zinc in management of male infertility. Tikrit Medical J. 2011; 17(1): 27-32.

5-Agarwal A, Prabakaran S, Allamaneni S. What an andrologist / urologist should know about free radicals and why. Urology. 2006; 67: 2–8.

6-Saleh RA, Agarwal A, Sharma RK, Nelson DR, Thomas AJ Jr. Effect of cigarette smoking on levels of seminal oxidative stress in infertile men: a prospective study. Fertil Steril. 2002; 78:491–499.

7-Padron OF, Brackett NL, Sharma RK, Lynne CM, Thomas AJ Jr, Agarwal A. Seminal reactive oxygen species and sperm motility and morphology in men with spinal cord injury. Fertil Steril. 1997; 67: 1115–1120.

8-Menkveld, R. Semen parameters including WHO and strict criteria morphology in a fertile and subfertile population: An effort towards standardization of in-vivo thresholds. Human Reproduction. 2001; 16(6): 1165-1171.

9-Aitken RJ, Buckingham DW, Brindle J, Gomez E, Baker HW, Irvine DS. Analysis of sperm movement in relation to the oxidative stress created by leukocytes in washed sperm preparations and seminal plasma. Hum Reprod. 1995;10: 2061-2071.

10-Athayde, K. and Cocuzza, M. Development of normal reference values for seminal reactive oxygen species and their

correlation with leukocytes and semen parameters in a fertile population. J. Androl. 2007; 28: 613–620.
11-Young J, Rey R, Couzine B, Chanson P, Josso N, Schaison G. Anti-Mullerian hormone in patients with hypogonadotropic hypogonadism. J. Clin Endocrinol Metab. 1999; 84: 2696-9
12-Rey R, Lordereun RI , Carl JC, Barbet P, Cate RL, Roger M. Anti-mullerian hormone and testosterone serum levels are inversely related during normal and precious pubertal development. J. Clin. Endocrinol Metab. 1993; 77: 1220-6.
13-Fuji SM, Yamasaki T, Okada H, Kamidonos S. The significance of anti-Mullerian hormone concentration in seminal plasma for spermatogenesis. Hum Reprod. 2002; 17(4): 968-70.
14-World Health Organization. laboratory manual for the examination of human semen and semen- cervical mucus interaction. 4th ed. NY: Cambridge University Press. 1999; Appendix IA, 60-1.
15- TOSOH ST AIA®-PACK Reproductive Hormone Assays.

Table 1: Showing Serum LH levels in different subgroups of spermcount variable

Sperm count report	Mean	N	Std. Deviation
Oligospermia	11,829	21	5,5707
Azospermia	13,335	69	6,8098
Normospermia	6,370	10	1,9839
Total	12,322	100	6,5440

Table 2: Showing Serum prolactin levels in different subgroups of spermcount variable

Sperm count report	Mean	N	Std. Deviation
Oligospermia	16.290	21	6.4308
Azospermia	14.525	69	8.0319
Normospermia	8.460	10	4.8569
Total	14.289	100	7.6896

Table 3: Showing Serum LH and prolactin levels in different subgroups of occupational group variable

test control	Occupational status		Prolactin [ng/ml]	LH [mIU/ml]
test	**Driver**	**Mean**	15.055	12.905
		N	42	42
	Baker	**Mean**	15.311	14.474
		N	19	19
	Farmer	**Mean**	14.492	12.317
		N	12	12
	Hard Labour	**Mean**	17.671	9.857
		N	7	7
	Employers	**Mean**	12.350	13.470
		N	10	10
	Total	**Mean**	14.937	12.983
		N	90	90
control	**Driver**	**Mean**	10.000	7.500
		N	1	1
	Farmer	**Mean**	9.067	6.800
		N	3	3
	Hard Labour	**Mean**	8.625	6.000
		N	4	4
	Employers	**Mean**	6.450	5.900
		N	2	2
	Total	**Mean**	8.460	6.370
		N	10	10