

## Determination of Infertility in Infertile Men in the Dukagjin Region in Republic of Kosovo

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### Abstract

Male infertility is the inability of a male partner to achieve a pregnancy in a fertile female partner. The purpose of this paper is to determine of infertility in infertile men in the Dukagjini Region of Republic of Kosovo. Materials and Methods, Measurement of hormonal parameters is made with the apparatus Biomerieux Mini Vidas Automated Immunoassay Analyzer. Semen analysis was done according to WHO recommendations of 2010. Significance of the presentation is made in  $p < 0.05$ . Blood samples were collected from 105 patients with infertility and 52 control patients. Results, From the results obtained after analyzing and comparing hormonal parameters in both groups of patients to take analysis (working group and group control) received the following results: The table shows that all hormones (FSH  $p < 0.003$ , LH  $p < 0.0001$ , PROL  $p < 0.007$ , TEST  $p < 0.0004$ ) defined in patients with infertility are the significantly higher degree compared with hormones designated the control group. Conclusions from the results obtained can be concluded that: the determination of hormones (FSH, LH, PROL, TEST) of infertile men is of great importance to determine the degree of infertility.

**Keywords:** Infertility; Follicle-stimulating hormone; Luteinizing hormone; Prolactina; Testosterone

### Introduction

Infertility is an important medical and social problem in the world as regards 15% of couples are infertile and 40% are infertile because of male factor infertility and 40% are because of female factor infertility and in the remainder both factors are associated [1]. It is already common knowledge that an appropriate endocrine milieu is necessary for the sexual differentiation, normal potency as well as for spermiogenesis maturation [2]. As a consequence of the complex anatomical and functional integration of the reproductive system, both spermiogenesis in the germinal epithelium and regulative role of hypothalamohypophyseal-testicular axis are very sensitive. Their alterations become apparent also in the deterioration of fertility [3].

The impact of spermiogenesis is encountered if the germinal epithelium and the sertoli cells are in the appropriate androgenic environment. For this environment, the LH hormone of the adenohypophysis is responsible [4]. This glycoprotein regulates the testosterone synthesis of the extratubular Leydig cells. The other gonadotropic hormone, FSH controls spermiocytogenesis and spermiogenesis by affecting both the germinal epithelium and sertoli cells [5]. However, LH secretion is regulated by the negative feedback of the testosterone in the vascular system. The serum LH concentration reflects the function of leydig cells; it is an important factor in the differential diagnosis between primary orchopathy and hypothalamohypophyseal hormone deficient [6].

Moreover, FSH secretion is regulated by the negative feedback of the testosterone and inhibin, a protein-type substance produced in sertoli cells. The actual inhibin production reflects the extent of the alteration of spermiogenesis; a considerable oligozoospermia results in decreased inhibin synthesis, which lead to an increased FSH production. Therefore, inhibin may be used as FSH marker even in therapeutical practice. As well as, determination of FSH is of considerable value in the examination of the epithelial function of the seminiferous tubules [7]. Male infertility is directly or indirectly responsible for 60% of the cases involving the reproductive-aged couples with fertility related issues [8-10].

During ejaculation, semen is produced from a concentrated suspension of spermatozoa stored in the epididymis and mixed with fluid secretions of the accessory sex glands. Semen has two major quantifiable attributes. Firstly, the total number of spermatozoa, which reflects sperm production by the testes and secondly, the patency of the posttesticular duct system and total fluid volume contributed by the various accessory glands, which reveal the secretory activity of the glands. The nature of the spermatozoa (vitality, motility, and morphology) and the composition of the seminal fluid are important parameters for proper sperm function [11]. A deficiency in semen, either quantitative or qualitative, is the most common cause of male infertility. Semen analysis is the single most important and fundamental initial laboratory investigation for the assessment of male infertility [12].

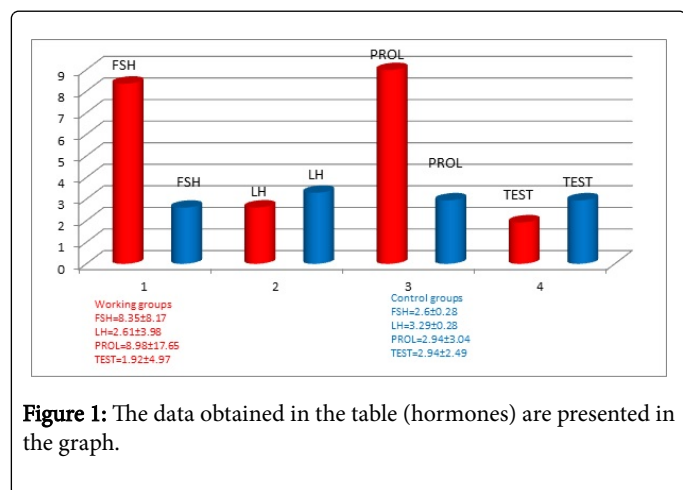
### Purpose

The purpose of this paper is to determine of infertility in infertile men in the Dukagjin region in Republic of Kosovo.

## Materials and Methods

For the determination of hormonal parameters is obtained blood infertile patients after submission to the doctor due to no ability to conceive after a period of more than one year of regular intercourse. Collection of samples was done in a period from January 2014 to January 2017, in the Biolab-Zafi endocrinology laboratory in Peja, Republic of Kosovo. In all patients were obtained: name, surname, year of birth, time of abstinence, periods of infertility (primary or secondary infertility), and is obtain blood for analysis.

Measurement of hormonal parameters is made with the apparatus Biomerieux Mini Vidas Automated Immunoassay Analyzer. Semen analysis was done according to WHO recommendations of 2010. The finding is to calculate the statistical program used Anova and t-test (Student TETS). Standard deviation is calculated, the arithmetic average. Significance of the presentation is made in  $p < 0.05$ . Blood and semen samples were collected from 105 patients with infertility and 52 control patients (Figure 1).



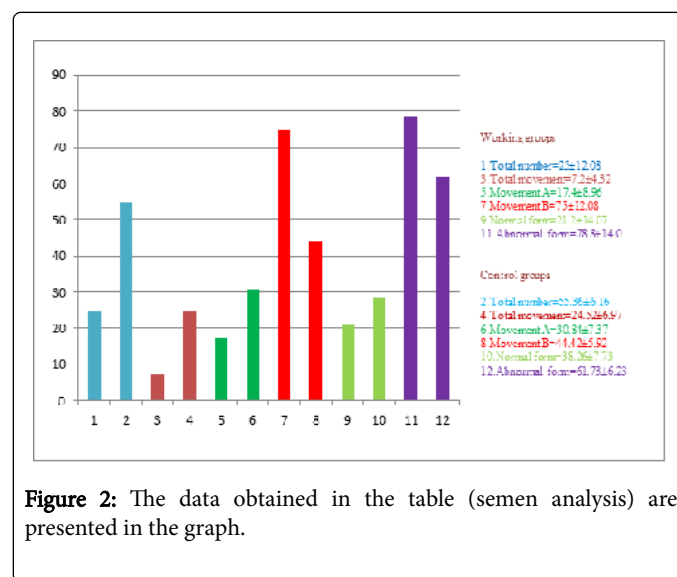
**Figure 1:** The data obtained in the table (hormones) are presented in the graph.

## Results

From the results obtained after analyzing and comparing hormonal parameters in both groups of patients to take analysis (working group and group control) received the following results.

The table shows that all hormones (FSH= $p < 0.003$ , LH= $p < 0.0001$ , PROL= $p < 0.007$ , TEST= $p < 0.0004$ ) defined in patients with infertility are the significantly higher degree compared with hormones designated the control group (Table 1).

Also the results are found changes in significant extent ( $p < 0.00001$ ) between the working group and the control group in all defined parameters of semen such as: Total count of sperm, total mobility number, the movement progressively a progressive movement B, normal morphology and abnormal morphology (Figure 2).



**Figure 2:** The data obtained in the table (semen analysis) are presented in the graph.

Variables	(Working groups 105 patients) Average/Standard	(Control groups 52 patients) Average/Standard	t-test	Significant ( $p < 0.05$ )	S-significant N-no significant
FSH	8.35 ± 8.17	2.6 ± 0.28	T=-2.798	$p < 0.003$	S
LH	2.61 ± 3.98	3.29 ± 0.28	T=-4.937	$p < 0.0001$	S
PROL	8.98 ± 17.65	2.94 ± 3.04	T=2.434	$p < 0.007$	S
TEST	1.92 ± 4.97	2.94 ± 2.49	T=-3.993	$p < 0.0004$	S
Total number	25 ± 12.08	55.36 ± 6.16	T=-10.687	$p < 0.0001$	S
Total movement	7.2 ± 4.32	24.52 ± 6.97	T=-9.994	$p < 0.0001$	S
Movement A	17.4 ± 8.96	30.84 ± 7.37	T=-5.624	$p < 0.0001$	S
Movement B	75 ± 12.08	44.42 ± 5.92	T=10.658	$p < 0.0001$	S
Normal form	21.2 ± 14.07	38.26 ± 7.73	T=-5.557	$p < 0.0001$	S
Abnormal form	78.8 ± 14.0	61.73 ± 6.23	T=5.935	$p < 0.0001$	S

**Table 1:** The table shows the hormonal analysis and sperm values, both groups [working groups and control groups], as well as their appearance on a significant scale.

## Discussion

The FSH, LH and testosterone evaluation is useful in the management of male infertility. FSH is necessary for initiation of spermatogenesis and maturation of spermatozoa [13]. In infertile men, higher concentration of FSH is considered to be a reliable indicator of germinal epithelial damage, and was shown to be associated with azoospermia and severe oligozoospermia [14]. De-Kretser et al. reported that elevated levels of serum FSH with increasing severity of seminiferous epithelial destruction [15]. Babu et al. indicated that gonadotropin (FSH and LH) levels were significantly elevated in infertile males when compared with the levels in proven fertile controls [16]. However, Sulthan et al. and Zabol et al. showed elevated levels of both serum FSH and LH in infertile males [17,18]. However, FSH acts directly on the seminiferous tubules whereas LH stimulates spermatogenesis indirectly via testosterone. FSH plays a key role in stimulating mitotic and meiotic DNA synthesis in spermatogonia [19]. The increase in serum levels of gonadotropins might have disrupted the spermatogenic process leading to the decline in the sperm count and infertility [20]. In the present study, elevated serum levels of FSH and LH were observed in oligozoospermic and asthenozoospermic males when compared with normozoospermic men [21]. Also found that the high values of FSH, LH, Testosterone affect the reduction of sperm parameters [22].

## Conclusion

From the results obtained it can be concluded that: Determination of hormones (FSH, LH, PROL, TEST) of infertile men is a big step towards predicting infertility. The results show that our definition of hormonal analysis and sperm parameters are of the utmost importance to each other, which should serve as an indication to medical personnel to determine male infertility. From our original work we can conclude that with the increase of hormonal parameters there is a reduction in sperm parameters (total number, total movement, movement A, movement B, normal form, abnormal form) and reduction of male reproductive capacity.

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