

Pattern of request for female fertility hormonal assay in Irrua Specialist Teaching Hospital (ISTH) Irrua, Edo State, Nigeria: One year retrospective study.

AdebayoKJ^{1,2}, Osuji KC²

¹Department of Chemical Pathology, Faculty of Clinical Sciences, College of Medicine, Ambrose Alli University, Ekpoma, Edo State, Nigeria.

²Department of Chemical Pathology, Irrua Specialist Teaching Hospital, Irrua, Edo State, Nigeria.

Abstract

Requests for infertility work up are often received in the chemical pathology laboratory. These are sent in from various consultants in the hospital and even from private clinics. There is ever increasing need to assist the infertile or sub fertile couples to achieve pregnancy or sexual satisfaction. We set out to find out which gender is being investigated more in this environment and from where do the requests come. A retrospective study of the master log book in the chemical laboratory was done for a period of one year (January – December 2014). The result shows that only 6% of males compared with 94% of females are being investigated in our laboratory. The excel software was used in the analysis of result. Females are being selectively investigated but in our opinion, this should stop and both partners should be investigated together to achieve better result.

Keywords: Infertility, Male factor, Female factor, Hormones, Fertility

Introduction

The quest for procreation is as ancient as the history of man. In many cultures, for a marriage to be seen as successful, it must be blessed with pregnancy and childbirth. For those not interested in childbearing however, they aim at sexual satisfaction among other reasons for marital union. No wonder then that help is quickly sought when either or both of the above reasons for getting married is/are not achieved as at when due in the union.

The gynecologist, surgeon (General or Urologist), General practitioner, Family physician, endocrinologist and the Chemical pathologist with attendant in Chemical Pathology laboratory are often contacted variously for help or assistance.

The control of the gonads, fertility and sexual behavior in humans is multifactor and this article will be concerned primarily with the hormonal control. Gonadotrophin releasing hormone (GnRH) produced

and secreted in the hypothalamus acts on the anterior pituitary gland which results in the production and release of Follicle Stimulating Hormone (FSH) and Luteinising Hormone (LH). These in turn act on either the testis (males) or ovary (females) to elaborate needed sex hormones. This process is regulated by hormonal and neuro-psychological mechanisms.

Any malfunction in the above stated mechanisms despite good or normal anatomy of the couple can result in sexual dysfunction and infertility.

Literature review

Infertility is defined as a couple's inability to conceive after 1 year of regular unprotected sexual intercourse, it is a condition which affects approximately 15% of the reproductive age population^{1,2}. A contributing male factor may be found in over half of cases with up to 40% of those being secondary to male factors alone^{2,3}. Male factor infertility is often characterized by abnormalities on semen analysis such as low or absent sperm counts and low motility. The diagnostic ability of available male investigative tools is limited, however, and likely underestimates the true prevalence of male factors in infertile couples. The World Health

Corresponding Author

Dr. Adebayo
Department of Chemical Pathology,
Faculty of Clinical Sciences, College of Medicine,
Ambrose Alli University, Ekpoma, Edo State, Nigeria.
Email: kjadebayo@yahoo.com

Organization stated that infertility is a major global public health issue of the last few decades. Infertility is estimated to affect about 72.4 million people worldwide with 40.5 million currently seeking medical care. The overall burden of sub fertility/infertility is significant; it is likely underestimated, and has not displayed any decrease over the last 20 years⁴.The fertility evaluation is typically initiated for couples who have been trying to conceive naturally for some period of time without success.

They should first undergo an evaluation to determine any barriers or available treatments for their best opportunity to conceive naturally.

Table 1: Reference values of male reproductive hormones

<i>Hormone (units)</i>	<i>Normal reference range</i>
Testosterone, bio available (ng dl ⁻¹) Total testosterone (ng dl ⁻¹) >20 years	240–950
20–39 years	72–257
40–69 years	40–213
Testosterone, free (ng dl ⁻¹)	
20–39 years	1.4–20.3
40–69 years	0.6–16.8
Estradiol adult (pg ml ⁻¹)	11.6–41.6
Folliclestimulating hormone adult (mIU ml ⁻¹)	0.9–15
Luteinizing hormone adult (mIU ml ⁻¹)	1.3–13
Inhibin B (pg ml ⁻¹)	47–308
Prolactin (ng ml ⁻¹)	2–15

Table 2: Male reproductive hormone evaluation profile as related to clinical condition

<i>Clinical condition</i>	<i>Folliclestimulating H</i>	<i>Luteinizing H</i>	<i>Testosterone</i>	<i>Prolactin</i>
Normal spermatogenesis	Normal	Normal	Normal	Normal
Abnormalspermatogenesis	High	Normal	Normal	Normal
Hypogonadotropic hypogonadism	Low	Low	Low	Normal
Hypergonadotropic hypogonadism /complete testicular failure	High	High	Low	Normal
Prolactin-secreting pituitary tumor	Normal	Normal	Low	High

Evaluation of reproductive failure

Clinical assessment of male reproductive failure represents a great challenge. Several factors (environmental, therapeutic, genetic, occupational, etc.) are responsible for male reproductive failure. These factors primarily affect the hypothalamic- pituitary-gonadal (HPG)axis, which results in hormonal imbalance and testicular damage causing reproductive failure and infertility.

Endocrine evaluation

An endocrine evaluation of an infertile male should be performed to check: (1) an abnormal testicular size and/or pathology; (2) abnormal semen parameters; (3) impaired sexual function; (4) other clinical findings suggestive of a specific endocrinopathy. Initial evaluation should include levels of serum testosterone (T), luteinizing hormone (LH), follicle stimulating hormone (FSH), inhibin and also prolactin (if erectile dysfunction is suspected). Table 1gives the reference values of these male reproductive hormones, A woman with a suspicion of chronic anovulation most probably due to polycystic ovarian (PCO) syndrome, as there is a long history of irregular cycles and clinical presentation with hirsutism, her serum levels of testosterone hormone, sex hormone binding globulin (SHBG), dihydroepiandrosterone (DHEA), dihydroepiandrosterone-sulfate (DHEAS) and prolactin should be evaluated to prove the provisional diagnosis and to detect the source of excess androgens. However, early referral of infertile couples to a dedicated specialist infertility clinic may be indicated to increase their chance of pregnancy. Other necessary tests as for male endocrine evaluation above should be carried out.

Method

After adequate consultation, necessary data was retrieved from the master result log book in the Chemical pathology laboratory of ISTH, Irrua, Edo state, Nigeria. The period analysed was from January 1, 2014 to December 31, 2014. Retrieved data included sex, clinical diagnosis and the referring clinic. The data was de-identified to protect the patients/clients. Analysis was by Excel software package and same presented as tables and figures.

Result

A total of 444 requests were received out of which males were 28 accounting for 6.3%(28/444) and females were 416 accounting for 93.7%(416/444).

Table 3: No of requests per month and gender

Month	Males	Females
January	0	0
February	0	0
March	2	35
April	5	86
May	2	48
June	3	52
July	0	0
August	6	70
September	3	22
October	0	2
November	6	57
December	1	44
Total	28	416

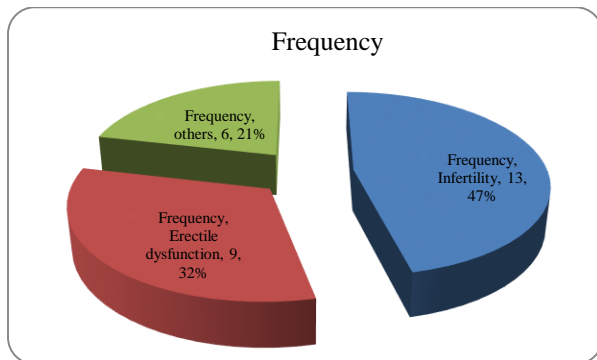


Fig. 1a: Pie Chart showing the diagnoses necessitating investigation in Males

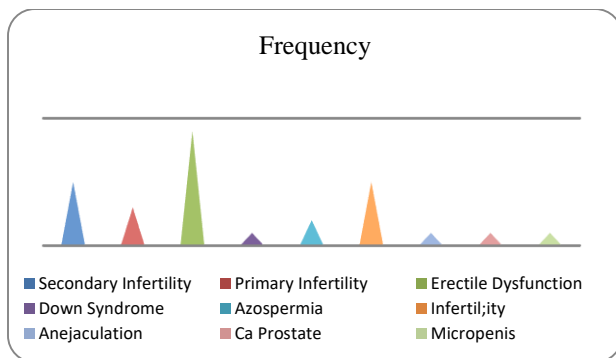


Fig. 1b: Bars showing the diagnoses necessitating investigation in Males

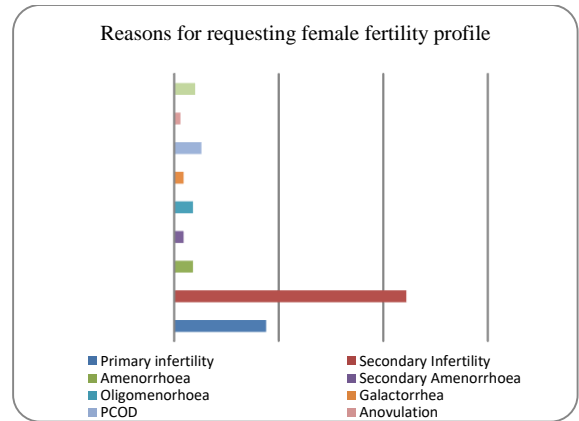


Fig. 2: Clustered column showing the reasons for requesting female fertility profile

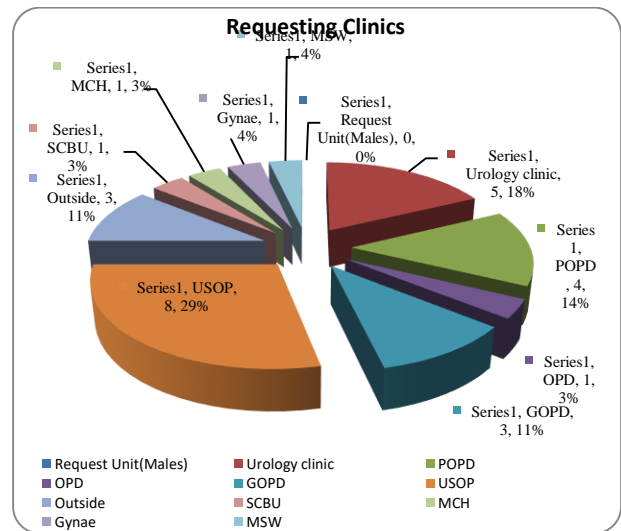


Fig.3: Requesting clinics for male fertility profile

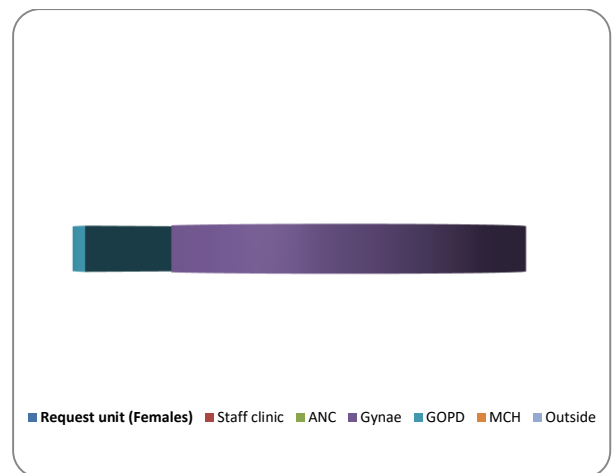


Fig.4: Requesting clinics for Female fertility profile

Discussion

Despite the fact that male factor accounts for about 40% of the causes of infertility, only about 6% males compared with about 94% of females are being investigated in the chemical pathology laboratory in this center for the given period reviewed. This agrees with the widely-held belief in many cultures that infertility is often due to female factor.

Infertile couples are usually advised to start their investigations after 12 months of trying to conceive or after 6 months if the female partner is more than 35 years old or immediately if there is an obvious cause for their infertility or subfertility⁵.

Infertility is a common clinical problem. It affects 13% to 15% of couples worldwide⁶. The prevalence varies widely, being less in developed countries and more in developing countries where limited resources for investigation and treatment are available⁷. In the United Kingdom, it is estimated that one in six couples would complain of infertility⁸.

Both partners should be investigated at the same time to achieve better result and there should be proper counseling by the attending physician or gynecologist.

Conclusion

This study has shown that males are not being investigated for infertility in this center as often as females. All efforts should be geared towards educating males at all referring or contact points. This type of education is necessary in order to assist appropriately when investigating couples for infertility.

References

1. Zegers-Hochschild F, Adamson GD, de Mouzon J, Ishihara O, Mansour R, *et al.* International committee for monitoring assisted reproductive technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology, 2009. *Fertil Steril* 2009; 92: 1520–4.
2. Mosher WD, Pratt WF. Fecundity and infertility in the United States: incidence and trends. *Fertil Steril* 1991; 56: 192–3.
3. Thonneau P, Marchand S, Tallec A, Ferial ML, Ducot B, *et al.* Incidence and main causes of infertility in a resident population (1,850,000) of three French regions (1988-1989). *Hum Reprod* 1991; 6: 811–6.
4. Charles Coutton, Rafael A. Fissore, Gianpiero D, Palermo, *et al.* Male Infertility: Genetics, Mechanism, and

- Therapies BioMed Research International Volume 2016, Article ID 7372362, <http://dx.doi.org/10.1155/2016/7372362>
5. Speroff L, Glass RH, Kase NG: *Female infertility. Clinical Gynecologic Endocrinology and Infertility*. 1999, Lippincott Williams & Wilkins, Philadelphia, PA, USA,
 6. World Health Organization: Report of the Meeting on the Prevention of Infertility at the Primary Health Care Level. 1983, WHO, Geneva, WHO/MCH/1984.4.
 7. Cates W, Farley TM, Rowe PJ: Worldwide patterns of infertility: is Africa different? *Lancet*. 1985, 2: 596-598. 10.1016/S0140-6736(85)90594-X.
 8. Zargar AH, Wani AI, Masoodi SR, Laway BA, Salahuddin M: Epidemiologic and etiologic aspects of primary infertility in the Kashmir region of India. *Fertil Steril*. 1997, 68: 637-643. 10.1016/S0015-0282(97)00269-0.