Prevalence of Hyperprolactinemia in Infertile Females

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ABSTRACT

Objective: To evaluate the prevalence of Hyperprolactinemia in infertile females.

Study Design: Observational Descriptive Study

Place and Duration of Study: This study was conducted at the Doctor's Trust Teaching Hospital affiliated with Rai Medical College Sargodha and FertiMed Fertility Centre from February 2019 to February 2020.

Materials and Methods: Female patients who presented with primary and secondary infertility among patients who were married and in the reproductive age group (15-49).Total number of the patients in this study was 120.The cut off level of hyperprolactinemia was >25 ng/ml. . The study was not funded. The duration of infertility was not considered.

Results: In this study mean age of the patients was 27.86+ with a variation of 6.17.Mean prolactin level was found to be 22.96 with avariation of 9.27ng/ml.The frequency of Hyperprolactinemia was recorded in 54%(n=65).The majority of the patients were mild to moderate hyperprolctinemic.

Conclusion: The results of this study advocated the evaluation of infertile female patients with serum prolactin levels, as increased prolactin levels may indicate alteration of hypothalamic pituitary ovarian axis causing reproductive dysfunction.

Key Words: Infertility, Hyperprolactinemia.

INTRODUCTION

Subfertility is quite common in the reproductive age group. The rate of female infertility is about 37% of all the infertile couples and more than half of these have ovulatory disorders[1]. Globally in 2010, 1.9% of all the reproductive age group females wanting to have a child could not have a live birth and 10.5% having a previous live birth had an additional one[2]. Infertility evaluation usually starts after one year of regular unprotected intercourse in women before 35 years of age and after six months aging more than 35. It may be initiated earlier if any associated pathology is suspected. Worldwide,endocrine disorders are affecting up to 14% of couples[3] .Increased prolactin level is acommon cause of infertility in women[4] .The incidence of this disorder ranges 9 to 17% in reproductive health disorders of females[5,6]. The diagnostic value of hyperprolactinemia is increased serum prolactin levels >25ng/ml on two different occasions.[7]

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Intra ovarian hormonal milieu and follicular function may be influenced due to hyperprolactinemia. A strong association is reported between serum and follicular development at the time of oophorectomy. Females with elevated serum prolactin level may also have significantly increased levels of prolactin in their antral follicular fluid. It may be associated with a significant reduction in FSH levels[8].

Hyperprolactinemia may be physiological, pathological or pharmalogical. Physiological increase in prolactin level is seen in lactating mothers. This should be kept in mind during evaluation. Elevated prolactin level are recorded in 30% of renal failure cases and 80% of those on haemodialysis.Mild elevated prolactin levels are observed in 40% of primary hypothyroidism cases and these respond to thyroxin treatment[9].

There are drugs that cause hyperprolactinemia. Antidepressants and antipsychoticdrugs, although some of the newer atypical antipsychotics do not do so. Other medications causing hyperprolactinemiainclude drugs for increased bowel motility.

Hormone influence on prolactin targeted tissuese.g breast tissue and reproductive system is responsible for clinical presentation of hyperprolactinemia. Women may present with decreasedlibido, infertility, oligomenorrhoea, amenorrhea and galactorrhoea. Quantitative serum prolactin evaluation and combination of these clinical symptoms helps in diagnosing clinical hyperprolactinemia.

Paucity in literature review creates ambiguity for gynecologists while managing infertile women. The results of this study emphasize the importance

of evaluation and treatment of this condition which is frequently encountered in our population.

MATERIALS AND METHODS

This study is a descriptive observational type which was February 2019 to February 2020 and patients from Fertimed fertility Centre. Total no of the patients was 120.The inclusion criteria was the married females with a history of inability to conceive after twelve months of unprotected regular sexual intercourse. A detailed examination was done, those being treated for hyperprolactinemia, an organic lesion in the pelvis, urogenital tract abnormalities, female tubal factors for subfertility and thyroid disease were excluded from the study.

All females with regular menstrual cycle were advised to visit the hospital on second or third day of follicular phase with 8-12 hours overnight fasting. Those who presented with a cyclical menstrual cycle or amenorrhea after excluding the pregnancy were advised for a random blood sample after an overnight fast.

For collection of 3ml of whole blood specimen a 5ml disposable syringe was used. The collected sample was sent to the hospital and center's lab for quantification of serum prolactin level by using Elisa technique. The normal reference range in this study was 8-22ng/ml.Those who had 23-100 ng/ml were categorized as mild,101-200ng/ml as moderate,201-1000ng/ml as high and>1000 ng/ml as very high. For data analysis SPSS 21 was used.

RESULTS

In this study total number of women fulfilling the inclusion criteria was 120,out of which 65 (54.1%) had hyperprolactinemia whereas 55 (45.8%) had normal prolactin levels As p value was < 0.001 . it was statistically significant difference with regards to degrees of hyperprolactinemia.

In our study age distribution shows hyperprolactinemia 12.5 %(n=15) between 18-24 years, 54.1 %(n=65) were between 25-34 years and33 %(n=40) between 35-40 years. Mean age was 27.86+6.17 years.

Table No. 1. Age distribution of 120 patients presenting with subfertility

Age in years	No. of patients	%
18-24	15	12.5
25-34	65	54.1
35-40	40	33
Total	**120**	**100**
Mean+SD	**27.86 ± 6.17**	

Figure I. Shows percentage of patients with hyperprolactinemia and normal prolactin levels.
Serum prolactin levels were categorized into mild, moderate, high and very high.
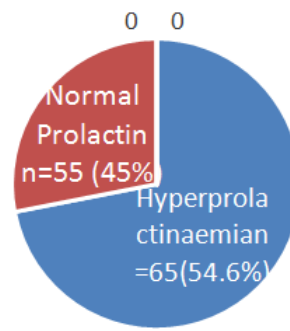
Figure No.1: Frequency of Hyperprolactinaemia in Infertile females
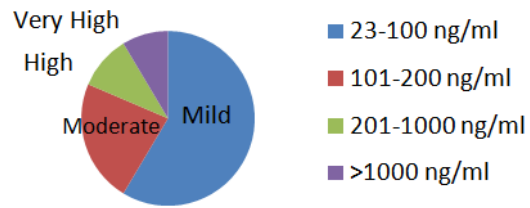
Figure No.2: Hyperprolactinaemia According to Serum Prolactin levels
When the degree of hyperprolactinemia was categorized in 65 hyperprolactinemic patients' majority had mild elevation of prolactin levels

Table No. 2. No. of Patients according to level of Hyperprolactinemia

Hyperprolactinaemia	No. of Patients	%age	p value
Mild	59	90.76	
Moderate	06	9.23	
High	00	00	< 0.001
Very high	00	00	
Total	65	100%	

Mean prolactin levelof our females was recorded as 22.96+9.27 ng/ml

Table No. 3. Mean prolactin level of infertile female (n=120)

Prolactin(ng/ml)	Mean	SD
	22.96	9.27

DISCUSSION

Female infertility is often associated with irregularity of hormones of which Hyperprolactinaemia is most common endocrine disorder of hypothalamic pituitary axis affecting the reproductive function[11,12,13]. Hyperprolactinaemiaimpairs pulsatile secretion of GNRH which then leads to ovulatory disorder.

IN this study 54.1% of females presenting with subfertility had hyperprolactinemia. These are comparable to the results by Prianka Sharmaet al, who found the incidence as 41% in the infertile group[14]. These results were comparable with a study by Go

swami et al[15] by Mohan et al as42% and Avasthii et al as 46%[17]. In another study conducted by Madhuprita Agarwal serum prolactin level was raised in 11.5%[18] which is much lesser as found in this study. Similarly studies conducted by Indu V et al as 18%[19]. Thirunavakkarasu et al found it as 15%[20], and Olooto et al as 28%[21] where the incidence was again lesser as found in this study. Increased prolactin levels may be because of the stresses found by N Sonino et al[22].This difference may be the varying degrees of stress in infertility women in different areas.

The females who participated inthis study belonged the reproductive age group ranging from 17-40 years. Of these 54.1 % belonged to the mid reproductive age group. The same age group has been identified by E .O. Nwachuku 29-33 years 39.5%[23]. In a cohort of 150 patients studied by Sanjia Sharma, 68% of primary and 32% with secondary subfertility were in the 26 to 30 years age group[24].

Mahuprita Agarwal in her study found that 53% of the cases were in 26-30 years age group as was found by Singh et al[25] and Ben Mousa Rashid et al[26]. In a National study conducted in Bahawalpur Hyper-prolactinaemia was found to be associated with subfertility, with a mean age 29.32% with a deviation of 6.26[27]. This is comparable with the findings of this study, 27.86% with a deviation of 6.17.The results of this study were also comparable with a study by Akpan et al[28].

Majority of the females found with hyperprolactinemia in this study belonged to the mid reproductive age group which could be because of the late marriages in this society and badly treated patients by quacks.

In this study 45.8% of bthe patients were having normal prolactin levels and 54.1% had hyperprolactnemia, it was also reported in a study conducted In Nigeria however majority of the patients were having mild hyperprolactnemia with a slight contradiction to this study. In a similar study by Isah et al ,it was found that 96.8% had mild hyperprolactinemia and moderate elevation in 3.2%[29]. In another study by Randal et al where 61.8% of the patients had moderate hyper-prolactinemia and 39% had highly elevated levels.[30] In this study none of the patients had prolactin level of more than 1000 ng/ml. This suggested that micro adenomas and macro adenomas are very rare among the infertile females as suggested by Nadeem[31].

CONCLUSION

The results of this and many other studies were comparable and it is concluded that all the female patients with subfertility should be evaluated for Hyperprolactinaemia, because it may cause pituitary ovarian axis resulting in menstrual disorders and anovulation. And thus this is suggested that timely management may cure this treatable cause of infertility.

Author's Contribution:

Concept & Design of Study:	Riaz Ahmad
Drafting:	Asifa Alia
Data Analysis:	Maria Hussain
Revisiting Critically:	Riaz Ahmad, Asifa Alia
Final Approval of version:	Riaz Ahmad

Conflict of Interest: The study has no conflict of interest to declare by any author.

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