

PATTERN OF CLINICAL PRESENTATION AMONG INFERTILE HYPERPROLACTINEMIC FEMALES

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Abstract: *The current prospective study was designed to assess the pattern of clinical presentation among infertile hyperprolactinemic females. This study was conducted at the Gynaecology Department Civil Hospital Karachi from March 2020 to Dec 2020. A total of 110 infertile women who visited the Gynaecology department of the hospital were included in the study. A sample of the subjects with regular menstrual cycles was collected on the second or third day after fasting for 8-12 hours overnight. Samples of the patients with irregular menstrual cycles or amenorrhea were collected randomly after overnight fasting. ELISA technique was used for quantifying serum prolactin. A total of 110 infertile women were evaluated, of which 58 (52.7%) were hyperprolactinemic. The clinical presentation included galactorrhea (27.5%) followed by a mixed presentation (22.4%), menstrual abnormalities (15.5%), recurrent abortion (8.6%), and hirsutism (3.4%). 22.4% of patients were symptomless. The most common pattern of presentation of hyperprolactinemic infertility was galactorrhea; a larger sample was symptomless.*

Keywords: Hyperprolactinemia, Female Infertility, Endocrine disorder

Introduction

Endocrine disorders affect about 15% of couples worldwide (Салманов, 2022). Hyperprolactinemia is a common endocrine disorder. Its prevalence ranges from 9% to 16% in women with reproductive problems (Igor'S et al., 2022). Hyperprolactinemia is diagnosed when serum prolactin level rises above the normal range of 20 to 25 ng/ml or when clinical symptoms appear (Aldahmani et al., 2020). Its etiology can be pathological, physiological, or pharmacological. Drugs stimulating pituitary or dopamine receptors or the hypothalamic dopamine system may increase prolactin levels (Venkatanarasu et al., 2021). Prolactinomas are the most common chronic hyperprolactinemia and make up almost 30% of pituitary tumors (Vroonen et al., 2019). Pathological hyperprolactinemia may occur due to nonhypothalamic-pituitary disease. Almost 40% of primary hyperthyroid cases have slightly increased prolactin levels managed by thyroid hormone replacement (Aldahmani et al., 2020). Hyperprolactinemia presents clinically when a hormone affects prolactin target tissue, predominantly breast tissue and reproductive systems. Clinical symptoms combined with serum prolactin immunoassay are used for identifying

hyperprolactinemia. According to studies, common clinical symptoms are osteopenia, hirsutism, recurrent abortion, menstrual abnormalities, diminished fertility and galactorrhea (Levin and Rottenstreich, 2019; Thapa and Bhusal, 2021). Local data are scarce regarding the clinical presentation of hyperprolactinemia in infertile women. Thus, this study aims to assess the pattern of clinical expression among infertile hyperprolactinemic females in Pakistan.

Methodology

The prospective study was conducted in the Gynaecology Department of Civil Hospital Karachi from March 2020 to Dec 2020. The study included infertile females aged between 15 to 45 years. Patients receiving hormonal therapy and with any chronic illness were excluded. A total of 110 infertile women who visited the Gynaecology department of the hospital were included in the study. Informed consent of the participants was taken. The ethical board of the hospital approved the study. All patients were unable to conceive despite unprotected sexual intercourse for 1 year. The demographic and medical

history of the patients was recorded. A sample of the subjects with regular menstrual cycles was collected on the second or third day of the cycle after fasting for 8-12 hours overnight. Samples of the patients with irregular menstrual cycles or amenorrhea were collected randomly after overnight fasting. A 3 ml blood sample from the anti-cubital vein was collected, and the venipuncture site was disinfected. ELISA technique was used for quantifying serum prolactin. Hyperprolactinemia was classified as mild (23–101 ng/ml), moderate (102–201 ng/ml), high (202–1000 ng/ml), and extremely high (greater than 1000 ng/ml) (Huang and Molitch, 2022).

SPSS version 23:00 was used for data analysis. Frequency distribution and cross-tabulation were used for preparing tables. Data were expressed as mean, frequency, and percentage.

Results

A total of 110 infertile women were evaluated, of which 58 (52.7%) were hyperprolactinemic (TABLE I). The percentage of hyperprolactinemic subjects having secondary infertility (72.4%) was higher than subjects having primary infertility (27.5%) (Table II). 55 (94.8%) subjects had mild, while 3 (5.1%) had moderate hyperprolactinemia. High or extremely high hyperprolactinemia was not reported (Table III). The majority (58.6%) of hyperprolactinemic females fell in the age group of 25-34 years, while the minority(10.3%) was in the age group of 14-24 years (Table IV). The clinical presentation included galactorrhea (27.5%) followed by a mixed presentation (22.4%), menstrual abnormalities(15.5%), recurrent abortion(8.6%), and hirsutism (3.4%).22.4% patients were symptomless(Table V).

Table I Prevalence of hyperprolactinemia

Infertile subjects	n(%)
Hyperprolactinemia	58 (52.7%)
Normo-prolactinemia	52 (47.2%)
Total	110 (100%)

Table II Association between the type of infertility and hyperprolactinemia

Infertility	n(%)
Primary	16 (27.5%)
Secondary	42 (72.4%)
Total	58 (100%)

Table III Distribution of subjects based on serum prolactin level.

Prolactin level	n(%)
Mild	55 (94.8%)
Moderate	3 (5.1%)
High	0 (0%)
Extremely high	0 (0%)
Total	58 (100%)

Table IV Age distribution of infertile hyperprolactinemic females

Age group	n(%)
15-24	6 (10.3%)
25-34	34 (58.6%)
35-44	18 (31%)
Total	58 (100%)

Table V Incidence of clinical symptoms

Symptom	n(%)
Hirsutism	2 (3.4%)
Recurrent abortion	5 (8.6%)
Menstrual irregularity	9 (15.5%)
Mixed symptoms	13 (22.4%)
Symptomless	13 (22.4%)
Galactorrhea	16 (27.5%)
Total	100 (58%)

Discussion

The current prevalence of hyperprolactinemia among infertile women was 52.7%. It was higher than previous studies, which reported 38% and 34% (Isah et al., 2018; Moronkeji et al., 2021). The difference in study population and different etiological factors can explain this difference. However, another study reported a prevalence rate of 49%(Emokpae et al., 2018), which was closer to ours. In the current study, 55 (94.8%) subjects had mild symptoms, while 3 (5.1%) had moderate hyperprolactinemia. It differed from a previous study, in which 62% of patients had moderate, while 40% had very high serum prolactin levels (Yedinak, 2019). In this study, no high or higher serum prolactin level was reported, suggesting that prolactinomas are rare among infertile women, as demonstrated by a previous study (Isah et al., 2018). The majority (58.6%) of hyperprolactinemic females fell in the age group of 25-34. It suggests that the majority of infertile hyperprolactinemic women fell in mid-reproductive age. In the current study, the minimum age was 15 years, while the maximum period was 45 years. It was similar to the results of a previous

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study(Auriemma et al., 2021). The majority of infertile hyperprolactinemic patients (72.4%) had secondary infertility. The study found that hyperprolactinemia increased proportionally during secondary infertility. In the current research, galactorrhea was the most common presentation of hyperprolactinemia. It differed from another study's findings, which reported menstrual abnormalities as the most common clinical symptom(Shamloo et al., 2020). Symptoms like hirsutism suggest chronic hyperandrogenism because of prolactin-induced increased secretion of dehydroepiandrosterone sulfate (Matheson and Bain, 2019). In this study, hyperandrogenic symptoms like hirsutism advance the probable coexistence of hyperprolactinemic with other hormonal disorders like polycystic ovarian syndrome. Recurrent abortion observed in the study can be due to hyperprolactinemia induced hypoestrogenism. Presence of no symptoms suggest that hyperprolactinemia is probably caused by macroprolactinemia. Macroprolactin do not bind with prolactin receptor and systemic response is not exhibited as its not biologically active. Specimens with elevated serum prolactin levels should be screened for detection of macroprolactin. The limitation of this study is small sample size. A larger study is required for further analysis.

Conclusion

The most common pattern of presentation of hyperprolactinemic infertility was galactorrhea; the larger sample was symptomless.

Conflict of interest

The authors declared absence of conflict of interest.

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