

Hyperprolactinemia as a Cause of Subfertility in Women

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ABSTRACT

Aim: To determine the prevalence of hyperprolactinemia in women with subfertility.

Methods: This case series study included 120 women with subfertility and conducted at Lady Aitchison Hospital, Lahore from 2-5-2014 to 1-1-2015. All women aged 15-45 years, failed to conceive in last five years and had no chronic illness were included.

Results: There were 78(65%) women with primary subfertility and 42(35%) with secondary subfertility. All cases have age limit of 15-45 years, with majority aged 36-45 years (52.2%). Serum prolactin levels were more than 25µg/L in 35 women (31.5%) among them 26(23.4%) with primary subfertility and 9 (8.1%) with secondary subfertility.

Conclusion: Anovulation is a primary cause of hyperprolactinemia leading to subfertility as compare to other secondary causes.

Keywords: Hyperprolactinemia, female subfertility, prolactin, anovulation

INTRODUCTION

Hyperprolactinemia means the presence of abnormally high values of prolactin.¹ Hyperprolactinemia is one of the most common endocrinological disorders. The main clinical symptoms are limited to hypogonadism, which manifests as fertility disturbances, oligo or amenorrhea in women^{2,3}. There is a higher incidence of hyperprolactinaemia in infertile patients.⁴ Female infertility is often associated with deregulation of hormonal networks, and hyperprolactinemia is one of the most common endocrine disorders of the hypothalamic-pituitary axis affecting the reproductive functions.⁵⁻⁷ Female infertility occurs in about 37% of all infertile couples and ovulatory disorders account for more than half of these.⁸ Infertility is frequently perceived by the couple as an enormous emotional strain⁹. Primary ovarian insufficiency has been diagnosed in adolescents as young as age 14 years. It is estimated that approximately 1% of the female population in the United States is affected by primary ovarian insufficiency¹⁰. Hyperprolactinemia can reduce fertility and libido. Although central prolactin actions are thought to contribute to this, the mechanisms are poorly understood¹¹. Biochemical laboratory investigations potentially contribute to the diagnosis of over 50-75% of couples being investigated for infertility¹². Measurements of TSH and prolactin are generally included in the evaluation of female infertility¹³. Elevated serum prolactin concentrations can adversely affect the reproductive cycle in females by inhibiting the normal luteinizing

hormone surge that stimulates ovulation¹⁴. Pituitary imaging should be obtained to identify pituitary tumours in all patients with persistently elevated PRL levels¹⁵.

SUBJECTS AND METHODS

This cross sectional descriptive study was conducted at Lady Aitchison Hospital, Lahore from 2-5-2014 to 1-1-2015. A total of 120 subfertility women were enrolled after obtaining informed consent. All patients were between 15-45 years age, had failed to conceive in last five years and had no chronic illness like diabetes, hypertension and chronic renal illness. Relevant data of cases including personal data, presenting complaints and type of subfertility were recorded. We measured serum prolactin level of all selected women and percentages were determined for age, primary and secondary subfertility. Median ages for primary and secondary subfertility were also determined.

RESULTS

Out of 120, 78 (65%) women were with primary subfertility and 42 (35%) with secondary subfertility. The majority of women 63 (52.5%) belonged to age 36-45 years (Table 1). Serum prolactin levels were more than 25µg/L among 44 women (36.7%), 33(27.5%) had primary subfertility and 11(9.2%) had secondary subfertility (Table 2). Among women with high prolactin level, 9 women had regular menstrual cycle (20.5%) while 45 women presented with menstrual irregularities (19.5%). Twenty six women (59%) had oligomenorrhea and 6 women (13.6%) had galactorrhea.

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Table 1: Age distribution (n=120)

Age (years)	n	%age
15-25	25	20.8
26-35	32	26.7
36-45	63	52.5
Mean±SD	33.22±8.59	

Table 2: Percentage of hyperprolactinemia in primary and secondary subfertility (n=120)

Type of Subfertility	Cases	Serum prolactin >25µg/L	%age
Primary	78	33	27.5
Secondary	42	11	9.2

DISCUSSION

In our study we found that 65% of the women had primary infertility and this is less when compared with international studies from the region^{16,17}. When compared with the findings of Indian workers like Sharma et al⁷ is quite similar. The frequency of secondary infertility was also close to studies done in India⁷. This may be because of the people in both countries come from the same stock. The mean age found in our study was 33.2 years while it was 30.20 in an American study¹⁸, 39.5 in English study¹⁹ and 33.8 in a Turkish study²⁰. This difference could be due to early marriage common in this part of the world. Our incidence of hyperprolactinemia (36.7%) was higher than found 28.3% in India⁷ and 32.5% found in Australia²¹. The cause of this is not known and further studies are required to settle this. High molecular weight prolactin (macroprolactin) has long been known in hyperprolactinemic fertile women. However, the prevalence of macroprolactinemia in hyperprolactinemic infertile women is not known. Macroprolactin screening is mandatory when clinical features and serum PRL assay results are conflicting¹⁶. A diagnostic method for macroprolactinemia should be available to all centers to avoid unnecessary hormonal or radiological investigations and treatments²². In this study macroprolactin was not measured due to logistical constraints. Hajder et al²³ have described amenorrhea, galactorrhea and infertility as the most common symptoms of prolactinomas. Micro prolactinomas are more frequent in women. Infertility associated with prolactinoma is reversible with treatment.²⁴ Again in this study prolactinomas was not specifically looked for since it was not the goal of the study. Chen et al²⁵ and Shibli-Rahal & Schlechte²⁶ have shown that amenorrhea associated with the use of antipsychotic medication is the result of hyperprolactinemia. If clinical symptoms occur, switching to a prolactin sparing antipsychotic may be necessary²⁷. However, none of the patients in our study was on antipsychotic medication. Prevalence of

hypothyroidism is 2-4% in women in the reproductive age group. Hypothyroidism can affect fertility due to anovulatory cycles, luteal phase defects, hyperprolactinemia, and sex hormone imbalance. Binita et al³ and Verma et al²⁸ have suggested that measurement of TSH and PRL should be done at early stage of infertility check up rather than straight away going for more costly tests or invasive procedures. Emokpae et al²⁹ showed the ratio of proportions between hypothyroidism and hyperprolactinemia was 1:7. Adequate levels of circulating thyroid hormones are of primary importance for normal reproductive function³⁰. Poppe et al³¹ reported that systematic screening for thyroid disorders in pregnant women remains controversial but might be advantageous in women at high risk, particularly infertile women. We did not perform TSH levels since it would have confounded the study.

CONCLUSION

Our study showed high prevalence hyperprolactinemia in women with subfertility, it is concluded that anovulation is a primary mechanism of hyperprolactinemia leading to subfertility as compare to other secondary causes.

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