

Prolactin Level in Infertility with Menstrual Irregularities

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Summary

Hyperprolactinemia is one of the important factors in the pathogenesis of anovulation, amenorrhoea, galactorrhoea syndrome and other menstrual irregularities. This study has been conducted to co-relate prolactin levels with infertility associated with menstrual dysfunctions. Late menarche was found in 31.2% while oligomenorrhoea was associated in 65% cases of primary and 35% in secondary infertility group. Luteal phase defect was found in 14.3% cases. Hyperprolactinemia was present in 20% cases. In cases of oligomenorrhoea 15.0% had high prolactin level while in cases with secondary amenorrhoea 30.7% patients were hyperprolactinemic. Incidence of galactorrhoea was found 25% for hyperprolactinemia and 11.1% in Euprolactinemic cases. Bromocryptine was given to all patients with hyperprolactinemia. 85.7% responded well to treatment.

Introduction

Hyperprolactinemia is usually associated with menstrual and ovulatory disorders like amenorrhoea, oligomenorrhoea, anovulation, ovulatory cycles with short or inadequate luteal phase, and galactorrhoea. Minimum amount of prolactin which is required for normal ovarian function and milk secretion vary between 5-19 ng/ml.

Elevated prolactin level (RIA) is found in hypothalamic dysfunction. Pituitary adenoma, hypothyroidism and ingestion of drugs like tricyclic antidepressant, tranquilizers, contraceptives, reserpine, methyl dopa and cimetidine.

Material and Method

Women attending the out patient department with H/O infertility and menstrual dysfunction were selected for the study. Other patients who were not

having these problems were taken as control. Serum prolactin estimation was done in both groups.

Complete menstrual and obstetric history along with thorough clinical examination was evaluated, previous history of drug intake was also taken in detail. Other information collected was use of oral contraceptive, prolonged lactation, major weight changes, infection – TB, gonorrhoea, postpartum sepsis, radiation, trauma, headache etc. Investigation included visual field examination, X-ray skull, CT Scan and MRI.

Hormonal assay of serum Prolactin, T3, T4, TSH, FSH, LH along with other investigation's of infertility like HSG, Diag. Laparoscopy, husband's semen examination etc. were also carried out.

Observation and Result

Total 35 patients were selected for the study who attended infertility clinic and had menstrual problems

with infertility. Majority of Patients were between 22-31 years of age (68.5%), literate (74.3%) and belonged to middle or upper middle class 80%. According to parity distribution 62.8% cases had prim. while 31.2% had sec. Infertility. In cases of Sec. Infertility 17.2% had H/o one abortion, 14.3% had H/o one delivery and 5.7% had two previous deliveries. Late menarche was found in 37.2% cases while 45.7% had their menarche at 15.17 years age, 14.3% at 12-14 years and 2.8% had not attained their menarche.

Oligomenorrhoea was associated in 65% cases of prim. infertility and 35% in sec. infertility followed by sec. amenorrhoea found in 53.8% of Prim. infertility and 46.2% of Sec. infertility cases (Table-I). Menstrual pattern was almost similar in both the group of prim. and sec. infertility (Table-II) Endometrial dating was done in all patients. Non secretory endometrium was present in

51.4% cases followed by secretory endometrium in 31.4% cases. Luteal phase defect was found in 14.3% cases while tubercular endometrium was reported in 2.8% cases.

Hormonal Status : Thyroid profile was normal in 85.7% cases while 14.3 had hypothyroidism. FSH level was low in 37.1% and high in 5.8% while LH levels were low in 40.0% and high in 2.9% (Table III). Prolactin level was normal in 80 % cases only, 20% patients had high prolactin levels. (Table IV). When we correlate menstrual dysfunction with prolactin levels majority of patients with oligomenorrhoea (85.0%) were euprolactinemic while 15 were hyperprolactinemic. In cases with secondary amenorrhoea 69.3% were euprolactinemic while 30.7% had high prolactin level (Table V).

Incidence of galactorrhoea was 25% for

Table 1: Relationship of Menstrual Dysfunction with Infertility

S.No.	Menstrual Dysfunction	Prim. infert.		Sec. infert.		Total	
		No. of cases	%	No. of cases	%	No. of cases	%
1.	Oligomenorrhoea	13	65.0%	07	35.0%	20	57.1%
2.	Sec. amenorrhoea	07	53.8%	06	46.2%	13	37.2%
3.	Prim. amenorrhoea	02	100%	-	-	02	5.8%
Total		22		13	35		
Percentage		62.8%		37.2%	100%		

Table II: Type of Infertility with Menstrual Pattern

S.No.	Type of Infert.	Duration of flow		Regularity		Flow				
		No. of cases	%	No. of cases	%	No. of cases	%			
1.	Primary Infert.	more	03	13.6%	Reg.	07	31.8%	Heavy	02	9.1%
		Normal	07	31.7%	Irr.	15	68.2%	Normal	06	27.3%
		Less	12	54.7%			Scanty	14	63.6%	
2.	Sec. Infert.	More	01	7.6%	Reg.	04	30.8%	Heavy	-	-
		Normal	03	23.1%	Irr.	09	69.3%	Normal	03	23.1%
		Less	09	69.3%			Scanty	10	76.9%	

Table III: Hormonal Status in Infertility

S.No.	Hormonal Status	No. of cases	Percentage
1.	Thyroid Status		
	Euthyroid	30	85.7%
	Hyperthyroid	0	0
2.	FSH		
	Low	13	37.1%
	Normal	20	57.1%
3.	LH		
	Low	14	40.0%
	Normal	20	57.1%
	High	01	2.9%

Table IV : Showing levels of prolactin

S.No.	PRL Level ng/ml	No.	Cases		Control		
			%	Mean \pm S. D. ng/ml	No.	%	mean ng/ml
1.	1 - < 20 (Euprolactinemics)	28	80	14.19 \pm 2.6	15	100	16.0 \pm 2.2
2.	21 - 400 (Hyperprolactinemia)	07	20	128.20 \pm 12.74	-	-	
Total	Mean \pm S. D.	35.	100	37.01 \pm 5.74			16.0 \pm 2.2 ($<$ 0.001)

Table V : Relationship of Menstrual Dysfunction with Prolactin Level

S.No.	Types of Menstrual Dysfunction	Total cases	PRL level ng./ml	Mean ng./ml	Euprolact.		Hyperprolact.	
					no. of cases	%	no. of cases	%
1.	Oligomenorrhoea	20	5-50	21.4	17	85	3	15
2.	Sec. amenorrhoea	13	8-400	52.5	09	69.3	4	30.7
3.	Pri. amenorrhoea	02	5-27	16.0	02	100	-	-

hyperprolactinemic patients and 11.1% for euprolactinemic patients. All patients of Galactorrhoea had secondary amenorrhoea too. Two cases had prolactinoma, one had microadenoma (50%) and second one had macroadenoma. One patient of hyperprolactinemia had Hirsutism.

Bromocryptine was given for 6-8 weeks, 85.7% responded well. Mean prolactin level dropped to 55.8 ng/ml (Pretreatment value was 128.28 ng/ml) for all hyperprolactinemic patients.

Discussion

Delayed puberty was seen in 37.2% cases with the mean age of 17 years. Similar study was done by Howlett et al 1989 who also reported delayed puberty in cases with infertility and hyperprolactinemia. All the 35 patients of study group had one or other menstrual irregularities. Oligomenorrhoea was dominated in 57.1% followed by sec. amenorrhoea in 37.2% and primary amenorrhoea in 5.8%. Sinha et al 1989 had also reported oligomenorrhoea as a dominating menstrual problem.

Out of 35 patients 14.3% showed hypothyroidism. These patients presented with Oligomenorrhoea. Gold Smith et al 1962 and Edson et al 1975 also reported that in women with hypothyroidism length of menstrual cycle changes and is independent of hyperprolactinemia

Incidence of hyperprolactinemia was 20.1% with mean serum prolactin level 128.28 ng/ml with standard deviation of 12.74 ng/ml (Sinha et al 1989 found 32% incidence of hyperprolactinemia). Mean serum prolactin value for euprolactinemic patients study

group was 14.19 ng/ml with S.D. 2.6 ng/ml. For control 16.0 \pm 2.2 ng/ml. In our study 15% cases had oligomenorrhoea, 30.7% had sec. amenorrhoea, 20% had L.P.D. comparable to the study done by Sinha et al (1989) - 8.9%, 24.4%, 6.2% respectively. Pepperell, 1978 and Seppala et al 1977 - reported incidence of hyperprolactinemia - 2.8% in oligomenorrhoea, 22.8 - 33 % secondary amenorrhoea and 2.5 - 4.1 with regular cycles.

LPD is responsible for infertility in 3-10% of all barren marriages. Higher incidence of LPD reported in hyperprolactinemia may be due to direct prolactin induced inhibition of hypothalamopituitary gonadotropin secretion Dizerga & Hodgen 1981.

25% patients had galactorrhoea in hyperprolactinemic patients while 11.1% patients were Euprolactinemic. Galactorrhoea which is a typical marker of hyperprolactinemia is not present in all patients hence serum prolactin is mandatory to diagnose hyperprolactinemia.

Franks & Jacobs 1983 suggested that any value higher than 300 ng/ml should be thoroughly investigated for prolactin and unexpectedly high values of serum prolactin ranging from 205-400 ng/ml was present in two cases of pituitary tumour. One was microadenoma 14.3 % other was macroadenoma 14.3%. Klienberg et al 1977 reported prolactinoma in 25 - 34%. The patients with macroadenoma had secondary amenorrhoea and Hirsutism along with galactorrhoea while patient with microadenoma presented with galactorrhoea and oligomenorrhoea.

All hyperprolactinemic patients were treated

with Bromocriptin. The level dropped in 6-8 weeks with good clinical response.

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