

# SERUM PROLACTIN ASSAY IN MENSTRUAL DYSFUNCTION WITH INFERTILITY

By

GEETA SINHA, (MRS.) J. MISHRA AND (MRS.) A. SINHA

## SUMMARY

Prolactin has been incriminated in the pathogenesis of anovulation in amenorrhoea galactorrhoea syndromes and other menstrual dysfunctions with infertility. One hundred and twenty patients presenting with either secondary amenorrhoea, oligomenorrhoea or luteal phase defect and infertility were selected. Seventynine had primary infertility and 41 had secondary infertility. Fifty cases with normal menstrual and reproductive function were selected for establishing the normal range of PRL. Serum prolactin was estimated by radio-immuno-assay using the HPRLK-PR kit. Results were expressed in micro IU/ml ( $\mu$  IU/ml), MRC 75/504 the normal range being 130-540  $\mu$  IU/ml. The control cases revealed a normal range of 135-500 with mean of  $287 \pm 125$  S.D. In our series 8.9% patients with oligomenorrhoea, 24.4% of patients with secondary amenorrhoea and 6.2% with luteal phase defect revealed hyperprolactinaemia. Only 1 patient (6.2%) revealed pituitary adenoma apparent on plain X-ray of skull. No case with primary amenorrhoea had hyperprolactinaemia in our series.

## Introduction

Recent advances in reproductive endocrinology has incriminated the anterior pituitary polypeptide hormone prolactin (PRL) in the pathogenesis of anovulation in amenorrhoea galactorrhoea syndromes and other menstrual dysfunctions with infertility. Moreover, the assay of prolactin in serum is undoubtedly one of the most useful assays for tumour related antigens as a prolactinoma may be present in 25 to 34% (Kleinberg *et al*, 1977) of women with amenorrhoea and/or galactorrhoea and

hyperprolactinaemia. Hence it is crucial for the early diagnosis and long term management. In an attempt to gain more insight into the possible role of prolactin excess in infertile women of Bihar, this study has been undertaken.

## Material and Methods

One hundred and twenty women with infertility (both primary and secondary) attending the Gynec OPD of Patna Medical College Hospital, were selected for serum prolactin estimation. 50 women with normal menstrual cycles and fertility were selected for the control group to establish the normal range and mean serum prolactin.

*From: Deptt. of Obstetrics and Gynaecology  
Patna Medical College and Hospital, Patna.*

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All the patients had a full menstrual and reproductive history taken. Information about past oral contraceptive use, any inappropriate lactation or continued lactation and major weight change, symptoms like headache and visual impairment, drug history, any chest trauma or surgery were elicited. This was followed by a thorough general and gynaecological examination, particularly the thyroid status and evidence of normal genitalia. Any watery or milky secretion expressed was considered as positive, if fat globules could be demonstrated on a wet mount of secretion. Renal damage was excluded by serum creatinine estimation. Endometrial biopsy was performed and BBT pattern was used to diagnose luteal phase defect. Serum prolactin was estimated by radio-immuno assay the HPRLK-PR kit which is a CIS kit for direct quantitative determination.

1 ng. CIS = 30  $\mu$  IU MRC 75/504.

Results were expressed in  $\mu$  IU/ml. MRC 75/504. The normal range being 130-504  $\mu$  IU/ml. with a mean 283  $\mu$  IU/ml. Patients with prolactin levels between 500 to 1000  $\mu$  IU/ml had a repeat assay done and the mean of the 2 values were taken.

Plain x-ray of the skull with coned down views of pituitary fossa were obtained and a thorough ophthalmological check up was

carried out, especially visual field examination. Medroxyprogesterone was administered to all the patients with amenorrhoea (5 mg thrice daily for 5 days) to assess the oestrogen status.

#### Observations

TABLE I

	No. of cases	%
I (A) Primary infertility (age 20-35 years)	79	65.81
(B) Secondary infertility (age 20-40 years)	41	34.1
II Control cases (age 20-40 years)	50	
Total	170	

TABLE III

Level of Prolactin in Control Group

No.	Range of prolactin levels	Mean	Standard deviation
50	135-500 $\mu$ IU/ml.	287	$\pm$ 125

TABLE II

Types of menstrual dysfunction	Total No. of cases	Percentage of cases	Primary infertility (No.)	Secondary infertility (No.)
1. Oligomenorrhoea	56	46.6	40	16
2. Secondary amenorrhoea	41	34.1	21	20
3. Primary amenorrhoea	7	5.8	7	—
4. Luteal phase defect	16	13.3	11	5



TABLE IV

Types of menstrual dysfunction	Prolactin level	Hyperprolactinaemia	
		No. of cases	Percentage
1. Oligomenorrhoea Total cases 56 PRL range	150-1200 $\mu$ IU/ml.	5	8.9
2. Secondary amenorrhoea Total cases 41 PRL range	150-11500 $\mu$ IU/ml.	10	24.4
3. Primary amenorrhoea Total cases 7 PRL range	135-540 $\mu$ IU/ml.	—	—
4. Luteal phase defect Total cases 16 PRL range	135-740 $\mu$ IU/ml.	1	6.2

TABLE V

Showing the Number and percentage of patients with galactorrhoea

	Hyperprolactinemic		Normo-prolactinemic	
	Number with galactorrhoea	Percentage	Number with galactorrhoea	Percentage
1. Oligomenorrhoea	1	20	2	4
2. Secondary amenorrhoea	4	40	1	3
3. Primary amenorrhoea	Nil	—	Nil	—
4. Luteal phase defect	Nil	—	Nil	—

TABLE VI

Total No. with Hyperprolactinaemia	Number with pituitary macroadenoma	Percentage
16	1	6.2

Table VII reveals that the majority of patients with hyperprolactinaemia were poorly oestrogenised supporting the assumption that prolactin exerts a negative peripheral effect on ovarian oestrogen production (Jacobs *et al*, 1976).

TABLE VII

No. of patients with hyperprolactinaemia		Oestrogenised	
		Number	Percentage
Total cases 16	Primary infertility (11 cases)	1	9.8
	Secondary infertility (5 cases)	1	20

### Discussion

Hyperprolactinaemia is present in 22.8% (Pepperell, 1978) to 33% (Seppala *et al*, 1977) of patients with secondary amenorrhoea in 2 to 8 per cent of patients with oligomenorrhoea and in 2.5% (Pepperell, 1978) to 4% of patients with regular cycles with unexplained infertility and corpus luteum defects. Our findings are concurrent with the above.

As polytomography or CAT scan was not available the incidence of microadenoma could not be ascertained. A pituitary macroadenoma was detected in a patient with the highest serum prolactin (11,500  $\mu$  IU/ml) with a long duration of secondary amenorrhoea (10 years), her visual fields were normal. It is obvious that serum prolactin level is directly proportional to the size of the prolactinoma. Hence any patient with PRL level greater than 1000  $\mu$  IU/ml should be thoroughly investigated (Franks and Jacobs, 1983).

Galactorrhoea was present in only 33 to

45 per cent of patients. Hyperprolactinaemia is quite an important cause of infertility and menstrual dysfunction. Galactorrhoea, its typical clinical marker is not present in all the patients. Hence serum prolactin estimation is mandatory for the diagnosis. Specific treatment of this condition can be instituted with bromocriptine after confirmation of the diagnosis.

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### References

1. Franks, S. and Jacobs, H. S.: Clin. Endocrinol. Metabol. 12: 641, 1983.
2. Jacobs, H. S., Franks, S. and Murray, M. A. F.: Clin. Endocrinol. 5: 439, 1976.
3. Kleinberg, D. L., Neel, C. L. and Frantz, A. G.: New Eng. J. Med. 296: 589, 1977.
4. Pepperell, R. J.: Med. J. Aust. (Suppl.), 3: 20, 1978.
5. Seppala, M., Lehtovirta, P. and Ranta, T.: Acta. Endocrinol. 86: 457, 1977.