HORMONE PROFILE IN FEMALE INFERTILITY

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SUMMARY

This hormone study showed an incidence of 31.03% hyperprolactinaemia in secondary amenorrhoea and 34.48% had galactorrhoea as well. 12.50% cases of oligomenorrhoea were hyperprolactinaemic.

Introduction

Approximately 15 per cent of infertile women have ovulatory defects (Moghissi, 1979). Ovulatory disorders are clinically obvious when the infertile subject reports amenorrhoea or oligomenorrhea. However, even in women who exhibit cyclic bleeding, occasional anovulatory disorder may occur. In the absence of clear-cut laboratory and clinical findings indicating the presence of conditions such as polycystic ovarian disease, hyperprolactinaemia and hypothalmaic-pituitary dysfunction or disorders, the precise cause of ovulatory disorder may remain obscure. Recent infertility studies have emphasized the importance of determination of the hormone profile by radioimmunoassay (R.I.A.) for pinpointing the factor responsible for the ovulatory disorder. Not only for proper diagnosis but also for determining the proper course of treatment, that hormone profile is absolutely mandatory.

In our infertility service, following the basic infertility workup, which includes clinical evaluation of both partners, semen study, P.CT., premenstrual endometrial biopsy, and hysterosalpingography ,if no explainable cause for infertility is detected we advise conservative treatment and optimistic waiting for a period of 6 months to 1 year (Rajan and Ambika Devi, 1981, and Rajan and Joseph, 1983). If conception is not achieved by this period of waiting a laparoscopic inspection of the pelvic cavity is performed (Rajan, *et al.*, 1983). A noncontributory endoscopic finding at this stage is considered to be an indication for determining hormone profile of the reproductive-endocrine system.

Subjects with delayed cycles or oligomenorrhoea evidencing no ovulatory evidence in the premenstrual endometrial biopy, but showing endogenic oestrogenic expression are induced ovulation with clomiphene citrate in gradually increasing dose schedules. If ovulatory response (BBT evidence) could not be induced at 150 mg dose schedule the patient is considered for hormone study.

The third group of patients whom we consider for study of hormone status are those reporting with secondary amenor

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rhoea with or without hirsuitism/galactorrhoea, where local uterine cause for amenorrhoea has been excluded.

Material and Methods

Over a period of 2 years 66 patients had the following hormone values studied as part of infertility evaluation. The indications have already been mentioned (Table I). Serum values for FSH, LH., Prolactin, T_3 and T_4 were determined for all subjects, and serum testosterone levels in some patients. All these patients had a single estimation of all these hormones by the radioimmunoassay method, and based on the reports and supplemented by the clinical findings a proper diagnosis was made and appropriate treatment instituted.

TABLE I
Patients Recruited for Hormone Study

Study Group	Menstrual pattern	Previous investigations/treatment	No. of patients
I	Secondary amenorrhoea		29
II	Delayed cycles or oligomenorrhoea	Increasing dose schedules with clomiphene citrate	16
III	Regular cycles	'Unexplained-infertility' Conservative treatment for 6 to 12 months	21

Results

Among the 29 patients with secondary amenorrhoea 9 subjects had markedly elevated serum prolactin values, ranging from 85 to 280 ng/ml (31.03%). In addition two more subjects had mild elevation of serum prolactin (25 and 35 ng/ml). Ten of the 29 amenorrhoeic subjects had galactorrhoea (34.48%), and among the 10 subjects wit galactorrhoea and amenorrhoea, 8 were hyperprolactinaemic (80%). One more patient who was hyperprolactinaemic was having secondary amenorrhoea not associated with galactorrhoea.

Marked elevation of FSH values suggesting primary gonadal failure was recorded in 3 of the 29 subjects with secondary amenorrhoea (10.34%). The FSH values in these subjects ranged from 60 to 65 m.i.u./ml, and in all the 3 patients ovarian failure could be confirmed at laparoscopy.

High LH levels indicating the possibility for polycystic ovarian disease was detected in 5 subjects (17.29%), and among them 1 patient achieved pregnancy following dexamethasone and bromocriptine combination therapy.

Of the 16 patients with either delayed cycles or oligomenorrhoea and not responding to clomiphene therapy there there were 2 subjects who had marked hyperprolactinaemia (serum prolactin 115 280 ng/ml) (12.50%). In addition there were 2 more subjects having mild hyperprolactinaemia ranging from 25 to 31 ng/ml. Both patients with marked hyperprolactinamia were obviously galactorrhoeic.

LH level was elevated indicating PCO syndrome in one subject (6.25%) FSH values were not abnormally elevated in any subjects in this group indicating that there were no patient with primary gonadal failures. However, FSH values were below

normal in 3 subjects who could be considered to be having pituitary or hypothalamic disorder.

Among the 21 subjects who had no explainable cause for infertility and having regular cycles, 3 patients (14.28%) had marked hyperprolactinamia, and all were galactorrhoeic. LH values were high in 12 subjects (57.14%) indicating the possibility for PCO syndrome. FSH values were normal, and no other endocrine dysfunction was identified in this group.

The hormone profile of the three groups of patients and the comparative incidence of various pathological entities are given in Table II.

Among the oligomenorrhoeic subjects or those with delayed cycles associated with anovulation, (not responding to clomiphene therapy), 12.50 per cent were hyperprolactinaemic, 6.25 per cent were having PCO syndrome, and 18.75 per cent had hypopituitarism.

In the 'unexplained-infertility' group 14.28% had hyperprolactinaemia, and 57.14 per cent had PCO syndrome.

Our treatment based on the hormone profile is as follows: Hyperprolactinaemic subjects are further investigated for thyroid function and nurological symptoms of tumor, and are essentially treated with bromocriptine with excellent results (Rajan

TABLE II

Comparative Incidence of Endocrine Dysfunctions

Menstrual Symptom	Hyperprolactinaemia	P.C.O. syndrome	Hypopituitarism	Primary ovarian failure
Secondary amenorrhea	31.03%	17.29%	nil	10.34%
Delayed cycles or ligomenorrhea	12.50%	6.25%	18.75%	nil
Unexplained infertility Regular cycles	14.28%	57.14%	nil	nil

Discussion

This study documents a 31.03 per cent incidence of hyperprolactinaemia in patients with secondary amenorrhoea. While 34.48 per cent of amenorrhoeic subjects had galactorrhoea as well, 80 per cent of the subjects with galactorrhoea and secondary amenorrhoea had hyperprolactinaemia. Primary ovarian failure as diagnosed by high FSH values and atrophic ovaries at laparoscopy was the eatiology for secondary amenorrhoea in 10.34 per cent of the patients. Polycystic ovarian disease was diagnosed in 17.29 per cent of amenorrhoeic subjects based on a high LH value.

and Ambika, 1983). The polycystic ovarian disease group is treated with clomiphene, dexamethasone, bromocriptine, or spironolactone, either singularly or in different combinations. We have achieved pregnancy with clomiphene alone or clomphene with bromocriptine, clomiphene with dexamethasone and bromocriptine with dexamethasone. Those with low FSH values or those with normal or low normal FSH and LH values (other hormones normal) but not responding to clomiMiphene are treated with HMG and HCG combination. Gonadotropin treatment has been started recently and as yet no pregnancies have

TABLE III
Pregnancy Following Treatment of Endocrine Infertility

Endocrine disorder	Therapeutic regime	No. achieving pregnancy
Hyperprolactinaemia	Bromocriptine	9
Polycystic ovarian disease	Clomiphene	12
	Clomiphene + bromocriptine	2
	Clomiphene + Dexamethasone	1
	Bromocriptine + dexamethasone	1
Hypothalamic-pituitary dysfunction or disease	H.M.G. and H.C.G.	nil

been achieved. Those with primary ovarian failure are advised to avoid any form of further treatment. (Table III)

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