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Endocrinological Factors and Recurrent Abortion

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OBJECTIVE – To evaluate the use of endocrinological factors in recurrent abortions. **METHODS** - In this prospective case control study 120 women were included : 70 subjects and 50 controls. Blood sugar and serum levels of prolactin, FSH/LH, progesterone and testosterone were estimated and thyroid function tests carried out in all the women. **RESULTS** - Hyper-secretion of LH (p=0.008) and low serum progesterone (p=0.05) levels were found to be significantly associated with recurrent abortion. The role of other factors was not statistically significant. Infertility and repeat abortions were found to be more common in the subjects with one or more endocrinological factors (p=0.05). **CONCLUSION** - Endocrinological factors are etiologically important in occurrence of recurrent abortions. Hyper-secretion of LH and luteal phase defects are two significant factors.

Key words : recurrent spontaneous pregnancy loss, luteal phase defect

Introduction

Recurrent spontaneous pregnancy loss(RSPL) is a perplexing clinical problem. It has been defined as the "Occurrence of three or more clinically detectable consecutive losses before 20th week of gestation"[1]. The role of various endocrine factors in RSPL has been the subject of debate. The contribution of a specific hormonal aberration as a primary cause of RSPL is difficult to estimate because an indisputable cause and effect relationship is not established. Potential hormonal causes for spontaneous abortion have included diabetes mellitus, thyroid disease and luteal phase defect[2]. The incidence of RSPL is 0.3-0.9%[3]. The incidence of RSPL in India is not known and only few studies have been published relating to the causative mechanisms. The present study aims to throw some light on the common endocrinological defects and their contribution to recurrent spontaneous pregnancy loss.

Material and Methods

One hundred and twenty women were registered for the study. These included 70 subjects with a history of recurrent spontaneous abortions and 50 controls with a normal past obstetric history. All the cases were clinically evaluated by taking detailed history and doing a thorough general, systemic and vaginal examination at the initial visit. Various endocrinological factors associated with recurrent abortions were evaluated by doing GTT. Serum T3/T4/TSH, serum prolactin, serum testosterone, day 2 LH and FSH and day 21 serum progesterone. A note was made about whether the women conceived or not and if conceived, they were followed up and pregnancy outcome was noted subsequently. All the data were compiled and analysed.

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Results

The subjects were 70 women who had two or more consecutive abortions. Out of these, 39 were pregnant and 31 were not. Controls were 50 women who had no previous abortions. These included 25 pregnant and 25 non-pregnant women. Subjects and controls were comparable by age, caste and socio-economic status.

All the women were subjected to a complete endocrinological workup. All the controls had normal blood sugar values while two of the subjects had abnormal blood sugar levels and it was found to be statistically insignificant (p=0.3). Likewise thyroid dysfunction was found to be statistically insignificant (p=0.5). Hypothyroidism was found in only one of the subjects and in none of the controls. Among non-pregnant women, one of the controls and five of the subjects had hyperprolactinaemia (S. prolactin > 20mg/ml) and in pregnant women, raised prolactin values (in relation to normal values at different gestations of pregnancy) were found in three controls and seven subjects i.e. overall, four controls and twelve subjects had hyperprolactinaemia. On statistical analysis this difference was also found to be insignificant (p 0.21).

Serum FSH and LH levels were estimated only in the non-pregnant women of control and study groups. Serum FSH was found to be elevated in three of the subjects and none of the controls (statistically insignificant). In contrast, serum LH levels were found elevated (> 15 mIU/ml) in five subjects and markedly elevated (>25 mIU/ml) in eleven subjects while raised levels were also found in five of the controls. This

variation in serum LH levels was found to be statistically significant by Chi square test after Mantel Hanszel correction (p=0.008), odds ratio was 4.92 (Exact 1.27<OR<20.96). Low serum progesterone levels were found in eleven subjects and three controls. This was statistically significant (p=0.09 by Fisher's exact test and 0.58<OR<295.34 by Odds ratio). This association was found in the non-pregnant subjects and controls but there was no association in the pregnant subjects and controls. No significant association was found with serum testosterone levels.

On follow-up of the pregnant subjects (n=39), it was found that five of them had a repeat abortion, out of which on investigations four had some endocrinological abnormal factor alone or in combination. This association with abnormal factors was found significant (p=0.03).

No significant difference (p=0.5) was found in the rate of conception of subjects in relation to presence of abnormal factors.

Table I summaries the findings of endocrinological factors in cases of recurrent abortion.

Table I : Various Endocrinological Factors Associated with Recurrent Abortions

	Subject (n=70)		Control (n=50)		'p' value
	n	%	n	%	
Diabetes	2	3.63	0	-	0.3
Hypothyroidism	1	1.44	0	-	0.5
Hyperprolactinaemia	12	17.65	4	8	0.21
Hyperandrogenism	6	9.52	1	2	0.1
Hypersecretion of LH	16	55.17	5	20	0.008
Low progesterone level (luteal phase defect)	11	18.03	3	6	0.05

Discussion

Luteal phase defect is one of the important endocrinolgical factors found in women with recurrent abortions in various studies. Tho et al[4] showed the incidence of 23%. Stray - Pederson and Stray - Pederson[5] 6%, Daya et al[6] 26%, Vanrell and Balasch[7] 15% and Tulppala et al[8] 8%. The present study showed 11% incidence.

The other endocrinological factor found to be significantly associated with recurrent abortions is hypersecretion of LH. This has also been documented by Regan[9] who found an incidence of miscarriage of 12% in women with normal pre-pregnancy LH and of 65% in women with elevated prepregnancy LH.

Statistically insignificant association was found in the present study as regards abnormal blood sugar levels, thyroid dysfunction, hyperprolactinaemia and hyperandrogenism. No significant association was found with abnormal blood sugar by Kalter[10] and with hyperprolactinemia by Soules et al[11].

Table II shows that 44.28% (n=31) of subjects showed one or more abnormal endocrinological factors (p=0.02). With abnormal endocrinological factors present, 58.05% women showed adverse outcome and presented with abortion or infertility (p=0.05).

Table II : Obstetric outcome and Presence of Abnormal Endocrinological Factors

	Percent of women showing abnormal endocrinological factors	Percent of women with abnormal endocrinological factors having abortion	Percent of women with abnormal endocrinological factors having infertility[a]	Percent of women with abnormal endocrinological factors having normal pregnancy
Subjects (n=70)	44.29	16.12	41.94	41.94
	n=31	n=5	n=13	n=13
Controls (n=50)	24	-	25	75
	n=12		n=3	n=9
	p=0.02		p=0.05	

[a] did not conceive during study period of one year

The rate of abortion was three times higher when one or more abnormal endocrinological factors were present (but the relation was found to be insignificant statistically p=0.13).

Thus, luteal phase defect and the hypersecretion of LH are two important factors seen in present study in cases of recurrent spontaneous abortions. But large epidemiological studies are needed in future to comment on the definite association of various endocrinological factors and recurrent abortions.

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