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ESTIMATION OF SERUM LEUTENIZING HORMONE IN DYSFUNCTIONAL UTERINE BLEEDING

Biochemistry

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ABSTRACT

The present study shows that there are changes within the cyclic endocrinology of each individual over time and these are reflected in changes in menstrual loss and could be related with decrease of LH, required for the secretion of estrogens, induction of ovulation and secretion of progesterone.

KEYWORDS

Dysfunctional Uterine Bleeding, Menstruation, Anovulation

Introduction:-

The change of granulose cells into lutein cells is mainly dependent on the luteinizing hormone secreted by the anterior pituitary gland in response to the releasing hormone from the hypothalamus. Infact, this function gave LH its name "Luteinizing".

LH leads to ovulation and subsequent secretion of corpus luteum. In women with normal ovaries, menstruation does not occur unless FSH and LH are available in the right amounts at the right time to stimulate ovarian hormone secretions which promote the proliferative and secretory phases of endometrial development.

Dysfunctional uterine bleeding is defined as a state of abnormal uterine bleeding without any clinically detectable organic, systemic and iatrogenic cause (Pelvic pathology, eg:- tumor, inflammation or pregnancy is excluded).

The bleeding thus is the result of endocrinal dysfunction and attributable to some derangement of hypothalamic- pituitary- ovarian endometrial axis.

The gonadotropins regulating steroidogenesis and folliculogenesis are Luteinizing Hormone (LH) and Follicular Stimulating Hormone (FSH) and GnRH plays a key role in secreting these hormones.

The role of LH in both oocyte maturation and ovulation is very important and is well established. However, the actual mechanism for these is still not understood (Knobil E, 1980).

A rise in LH levels by the mid-follicular phase of the menstrual cycle coincides with the acquiring of LH receptors by the granulosa cells (Hillier SG, *et al*. 1997) and a premature LH surge may cause early luteinisation and follicular atresia in cases of controlled ovarian hyperstimulation (Diedrich K, *et al.* 1994).

High LH levels results in a premature secretory transformation of the endometrium causing an asynchrony between the embryos and the endometrium to which they are transferred and lead to decreased pregnancy rates (Kolibianakis EM, *et al.* 2003; Kolibianakis E, *et al.* 2002 and Al-Inany H, *et al*. 2005).

Aim and Objectives:-

1. To evaluate LH levels in patients with abnormal uterine bleeding.
2. Assessment of menstrual patterns in women with DUB.
3. Comparison of serum LH values in various phases of menstrual cycle of DUB cases.
4. Comparison of serum LH values of various age groups of DUB cases with control group.

Material and Methods:-

A hospital based case control study was carried out on 60 women, who presented with abnormal uterine bleeding to the outpatient department (OPD) were recruited in the study.

The results of the patients were compared with 40 age matched control females without having any bleeding disorder.

Normal range of LH:-

Clinical state	LH mIU/ml
Pre pubertal	2-12
Adult Women	1-30
Menopause	30-200

The subjects for the study were grouped as follows:-
Group A (Study Group):- Study group consisted of women with abnormal uterine bleeding (n=60).

Group B (Control Group):- Females without any bleeding disorder.
Inclusion criteria:-

1. All women with DUB from puberty to menopause.

Exclusion criteria:-

1. Women on drugs/hormone replacement therapy.
2. IUCD users.
3. Women with other gynaecological problems. E.g.:- Infertility, etc.
4. History of bleeding disorder.

The study protocol included a thorough history taking regarding age, bleeding pattern, onset and duration of dysfunctional uterine bleeding.

Random blood samples were collected from anticubital vein by aseptic technique. Blood was allowed to clot at room temperature and after centrifugation the serum was collected and subjected for assay of LH.

Estimation of LH was done by Radioimmunoassay.

RESULT AND DISCUSSION:-

In the present study the DUB subjects included were of menorrhagia, polymenorrhea, polymenorrhagia, oligomenorrhea and menometrorrhagia.

Table 1:

S.No.	Group (No. of subjects)	Serum LH (mIU/ml) Mean ±S.D. Range
	Control (40)	**31.85±19.67 7-70**
1	Menorrhagia (22)	22.98±19.73 2.8-60
2	Polymenorrhea (08)	22.00±0.7-11 12-28
3	Polymenorrhagia (11)	12.55*±0.466 4.8-18
4	Oligomenorrhea (09)	18.50±0.4.66 2.5-38
5	Menometrorrhagia (10)	26.71±20.50 2.5-60

*p< 0.05 significant

The above table **(Table 1)** shows that in all DUB subjects lower levels of LH were found as compared to control subjects. However significantly lower values were obtained in polymenorrhagic women.

Pathogenesis of excessive menstrual blood could be a relative lack of progesterone in the luteal phase, resulting in a reduced suppression of PG synthesis and the excess of PG's associated with menorrhagia (Eldred *et. al* 1994).

Table 2:

S.NO.	GROUP (No. of subjects)	SERUM LH (mIU/ml) Mean ± SD Range
	Control (40)	31.85±19.67 7-70
1	Follicular phase (16)	11.66*±0.773 7-28
2	Luteal Phase (28)	21.44±14.64 7-60
3	Menstrual Phase (16)	14.76±12.26 28-38

*p <0.05 significant

(Table2) In different phases of the menstrual cycle significant decrease in LH concentration was observed in follicular phase. Although the levels remained low in luteal and menstrual phase too.

The majority of adolescent patients with dysfunctional uterine bleeding are due to immaturity of the hypothalamic axis (Axel and Jones 1974).

Such patients do not trigger an LH surge due to insensitivity of the positive estrogen feed back resulting in incoordination in follicular maturation (Hunter et al. 1978).

Table 3:

S.No.	GROUP (No. of subjects)	SERUM LH (mIU/ml) Mean ± SD Range
	Control (40)	31.85±19.67 7-70
1	15-25 years (11)	11.16*±05.10 2.8-18
2	26-35 years (21)	13.75*±10.51 2.5-38
3	36-45 years (17)	28.00±22.49 7-60
4	46-55 years (11)	23.00±0.8.85 14-38

*p<0.05 Significant

(Table 3) The serum LH concentration when related to age, It was observed that significantly lower values were found in age group 15-25 years. The other age groups also showed lower values as compared to control group.

Conclusion:-

In all subjects (cases) lower serum LH concentration was observed as compared to control group. Significantly lower values were observed in polymenorrhagia. Lower levels were observed in follicular phase as compared to the luteal phase. 15-25 year age group showed a significant lower concentration of LH.

Thus in all women the possible reason for DUB could be due to the low levels of LH.

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