

EVALUATION OF SERUM LDH LEVEL IN GYNAECOLOGICAL CANCER

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SUMMARY

Lactate dehydrogenase (LDH) is an enzyme which is increased in body with increased glycolytic activity. The rise in serum LDH activity is seen in various types of gynaecological cancers and significant fall in the level of this enzyme is seen in post-operative period of these patients.

Introduction

Lactate dehydrogenase (LDH) is an enzyme universally distributed in body and catalyzes the reversible transformation of lactate to pyruvate. Increase glycolytic activity is associated with concomitant rise in serum LDH activity.

The aim of present study was to find out the significance of serum LDH levels in the diagnosis and prognosis of different gynaecological cancers.

Material and Methods

This study was done on 120 women attending U.I.S.E. Maternity Hospital, Kanpur. The cases were divided in following three groups:

1. Twenty apparently healthy women, ranging between 20 to 60 years of age, served as control.
2. Thirty women, between 30 to 50 years of age, having benign tumours of genital organs comprised the second group.

3. Third group included 70 women between 20-60 years of age, suffering from gynaecological cancer. 50 women of cancer cervix, 8 women of ovarian carcinoma, 6 women of carcinoma body of uterus, 2 women of choriocarcinoma, 2 women of carcinoma of vulva and 2 women of carcinoma of vagina were studied.

Various blood samples were collected from all the subjects and serum LDH activity was assayed before operation, one week after and 3 weeks after operation by continuous monitoring method of Wroblewski and La Due (1955). The data were evaluated statistically by Student's 't' test.

Results

Mean serum LDH level in control group and in patients of benign tumours is shown in Table I. Serum LDH level in patients with benign tumours was not significantly different from that in control subjects ($P > 0.05$).

Mean serum LDH level in various stages of cancer cervix is shown in Table II. The level rises as the stage advances.

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TABLE I
Serum LDH Level in Control Group and in Different Types of Benign Tumours

| Sl. No. | Group | No. of cases | Mean S.LDH I.U./Litre | S.D. | 'p' value |
|---------|-----------------|--------------|-----------------------|---------|-----------|
| 1. | Control | 20 | 144.35 | ± 26.9 | — |
| 2. | Benign tumours: | | | | |
| | —Fibroid uterus | 18 | 156.27 | ± 33.38 | >0.05 |
| | —Ovarian Cyst | 12 | 156.33 | ± 31.13 | >0.05 |

TABLE II
Serum LDH Activity (Mean ± S.D.) in Various Stages of Carcinoma of Cervix Before Treatment

| Sl. No. | Stage | No. of cases | Mean S.LDH level (IU/L) | S.D. |
|---------|-------|--------------|-------------------------|--------|
| 1. | 0 | 5 | 180.40 | ± 2.72 |
| 2. | I | 9 | 182.98 | ± 2.51 |
| 3. | II | 17 | 203.29 | ± 2.79 |
| 4. | III | 10 | 245.50 | ± 3.32 |
| 5. | IV | 9 | 250.11 | ± 2.72 |

| | |
|------------------------|-----------------|
| ± (St. 0 Vs. St. I) | = 1.7 p <0.05 |
| ± (St. I Vs. St. II) | = 38.8 p <0.01 |
| ± (St. II Vs. St. III) | = 35.16 p <0.01 |
| ± (St. III Vs. St. IV) | = 3.07 p <0.01 |

Highest levels are seen in stage III and IV.

Table III shows mean serum LDH activity in various gynaecological cancers before treatment, one week after and 3 weeks after treatment. It is evident that serum LDH level declines one week after treatment and approaches near to control group 3 weeks after treatment. This decline is statistically significant.

Discussion

We found the difference between the mean serum LDH levels in 1st and 2nd group was statistically insignificant, same has been observed by Robert, D. Goldman (1964); Awais (1973) and Saxena *et al* (1984).

We found that mean serum LDH level was significantly raised in cases of carcinoma cervix. Similar is reported by Laurova *et al* (1974) and Saxena *et al* (1984), whereas after 1 week and 3 weeks after treatment there was significant decline in mean serum LDH levels. Saxena *et al* (1984) have also reported the same.

We found statistically significant rise in levels of mean serum LDH in cases of ovarian carcinoma. The level declined significantly after 1 week and 3 weeks of treatment our results are in agreement with Singh *et al* (1977), Goldman *et al* (1966), Awais (1973) and Saxena *et al* (1984).

Serum LDH activity was found elevat-

TABLE III

| Sl. No. | Diagnosis | Time of LDH Estimation | Mean Serum LDH Level (IU/L) \pm S.D. | 'p' value |
|---------|--------------------|------------------------|--|-----------|
| 1. | Cancer Cervix | Preoperative | 205.52 \pm 27.4 | — |
| | | 1 wk. after op. | 192.7 \pm 26.4 | < 0.01 |
| | | 3 wks. after op. | 163.14 \pm 28.6 | < 0.01 |
| 2. | Cancer Ovary | Preoperative | 369.25 \pm 46.18 | — |
| | | 1 wk. after op. | 229.5 \pm 20.35 | < 0.01 |
| | | 3 wks. after op. | 159.62 \pm 14.74 | < 0.01 |
| 3. | Ca. Body of Uterus | Preoperative | 240.16 \pm 30.86 | — |
| | | 1 wk. after op. | 219.5 \pm 31.91 | < 0.01 |
| | | 3 wks. after op. | 171.16 \pm 32.18 | < 0.01 |
| 4. | Chorio-Carcinoma | Preoperative | 308.0 \pm 10.2 | — |
| | | 1 wk. after op. | 251.5 \pm 41.3 | < 0.01 |
| | | 3 wks. after op. | 166.5 \pm 5.5 | < 0.05 |
| 5. | Carcinoma Vagina | Preoperative | 275.5 \pm 7.5 | — |
| | | 1 wk. after op. | 228.5 \pm 8.5 | > 0.05 |
| | | 3 wks. after op. | 170.0 \pm 2.0 | < 0.05 |
| 6. | Carcinoma vulva | Preoperative | 284.0 \pm 14.0 | — |
| | | 1 wk. after op. | 209.5 \pm 11.5 | < 0.05 |
| | | 3 wks. after op. | 167.0 \pm 11.0 | < 0.05 |

ed in patients with carcinoma body uterus, Ca vulva, Ca vagina and chorio-carcinoma but the number of patients was too small to draw valid conclusions.

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