

Plasma diamine oxidase levels in pregnancy complicated by threatened abortion

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SUMMARY Plasma diamine oxidase levels were assayed in 66 patients who presented with pregnancy complicated by threatened abortion. Levels within the normal range were associated with continuing pregnancies, whereas levels below the normal range were associated with subsequent abortion. Among those patients in whom gestation was greater than eight weeks, 66.6% of diamine oxidase levels correctly predicted the pregnancy outcome. Assay of the diamine oxidase levels at eight weeks of gestation or less gave little useful information.

When pregnancy is complicated by threatened abortion clinical examination correctly assesses the state of viability of the pregnancy in only 62%¹ of cases. For this reason many assays of placental and fetoplacental hormones and enzymes have been developed to assist in the diagnosis of the state of viability of the pregnancy. Use of these assays reduces hospitalisation time.

Diamine oxidase (histaminase) is an enzyme produced by the decidua, and its plasma values rise rapidly during the first half of pregnancy and then more gradually to term. Evaluation of its accuracy in predicting pregnancy outcome is reported in this study.

Patients and methods

Sixty-six patients who presented with painless vaginal bleeding before 20 weeks of gestation had a blood sample taken soon after presentation. The plasma was stored at -20°C and the assays were all performed on completion of the study.

Plasma diamine oxidase activity (EC: 1.4.3.6) was determined using ¹⁴C-putrescine (Radiochemical Centre, Amersham, England) according to the method of Tryding and Willert.² Their published range of normal values was used for interpretation of the results.

Results

The 66 patients were divided into two groups according to the period of gestation.

A GESTATION GREATER THAN 8 WEEKS

There were 54 patients in this group. The Table shows the distribution of results according to the pregnancy outcome and the level of plasma diamine oxidase in relation to the normal range.

Plasma diamine oxidase levels in 54 patients (with threatened abortion) in whom gestation was greater than 8 weeks

| | No. | Pregnancy continued | Pregnancy aborted |
|----------------------------|-----|---------------------|-------------------|
| Levels within normal range | 23 | 11 | 12 |
| Levels below normal range | 31 | 6 | 25 |

Further analysis of these results shows that in 36 cases (66.6%) the plasma diamine oxidase level correctly predicted the outcome of the pregnancy. When the levels were within the normal range 47.8% of pregnancies continued, and when the levels were below the normal range 19.4% of pregnancies continued. These differences are statistically significant ($P < 0.05$).

B GESTATION OF 8 WEEKS OR LESS

Analysis of the results in this group was complicated by the normal non-pregnant range (of plasma diamine oxidase) of up to 8 m IU/l. Among the 12 patients in this group four had levels above 8 m IU/l but only one pregnancy continued. Among the other eight cases with levels of 8 m IU/l or less, four pregnancies continued.

In addition to the 66 patients included in this

study four patients with hydatidiform mole had plasma diamine oxidase levels assayed. Two had levels within the normal range and two had levels below the normal range for the gestation.

Discussion

Because diamine oxidase is present in the plasma of non-pregnant women and early pregnancy levels are low, it is of little use until after eight weeks of gestation. Low levels after this gestation suggest that the pregnancy will end in abortion. This confirms earlier work.^{3 4} Southren *et al.*⁴ also suggested that when low levels of diamine oxidase are present and the pregnancy continues it should be regarded as high risk. In this study there were six such patients, all of whom subsequently had normal pregnancies. Beaven *et al.*³ suggested that plasma diamine oxidase assay would also be of use in trophoblastic disease. They found high human chorionic gonadotrophin levels and low plasma histaminase activity in such cases. In this study there were four patients with trophoblastic disease. In two patients the plasma diamine oxidase levels and human chorionic gonadotrophin levels were within the normal range, and in the other two patients the plasma human chorionic gonadotrophin levels were high and the plasma diamine oxidase levels were below the normal range for the gestation.

The accuracy of prediction of pregnancy outcome

from plasma diamine oxidase levels was similar to the accuracy of prediction based on plasma levels of human placental lactogen, cystyl aminopeptidase, beta-subunit human chorionic gonadotrophin, alpha-fetoprotein, and beta 1-glycoprotein but significantly less accurate than predictions based on plasma levels of oestradiol and progesterone.¹

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References

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