

OXYTOCINASEMIA IN MULTIPLE PREGNANCY

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The determination of oxytocinase is the method of choice in monitoring multiple pregnancy. An increase in the level of the enzyme indicates a normal development of the pregnancy.

Although, as a rule, the oxytocinase level is higher in multiple than in single pregnancy, there are cases with a level pointing to intrauterine fetal danger, if, in a gestation beyond the seventh lunar month, it is lower than 4 $\mu\text{mol/l/min}$.

The birth of a newborn with a body weight below 2500 g, when the oxytocinase level exceeds 12 I.U., indicates that a multiple pregnancy is involved.

The determination of the oxytocinase level in the blood serum, besides the determination of the level of somatomammotropin, is one of the fundamental methods for tracing the development of the fetus and offers the possibility to anticipate fetal danger many weeks before clinical symptoms appear (Klimek 1963, 1972). On the basis of our long experience, we know that the determination of the level of oxytocinase, coupled with an indirect determination of the level of endogenous oxytocin in the serum, is the method of choice in order to define the proper time for the end of the pregnancy, i.e., what we understand as the moment when the fetus attains maturity.

These data concern pregnancy in general, but Milewicz (1965) has shown that the criteria for the relativity of duration hold for multiple pregnancy as well. In 1972 he has also suggested to introduce the notion of prolonged multiple pregnancy, although the latter's physiological duration is, statistically, significantly shorter than in single pregnancy. This was confirmed in a clinical material, in which the deliveries occurred according to the physiological norm of their appearance, and the postnatal body weight of newborns showed changes characteristic for full-term pregnancy, although it could apparently point to their greater coincidence with premature infants than with infants with low birth-weight (Bryniak and Kallista-Milewicz 1971, Bryniak et al. 1972).

Taking the above data into account, we decided to present the generalizations resulting from our experience in monitoring pregnancy by means of routine determination of the level of oxytocinase.

Fig. 1 shows the usefulness of determining oxytocinase for diagnosing the intrauterine maturity of the fetus, and also points to the possibility of defining the fetal danger zone (Klimek 1972). It is known that the attainment of a level of 6 $\mu\text{mol/l/min}$, i.e., of 6 international units (I.U.) of the enzyme, as a rule testifies of the attainment by the fetus of intrauterine maturity, which we understand, conventionally, in terms of a fetus body

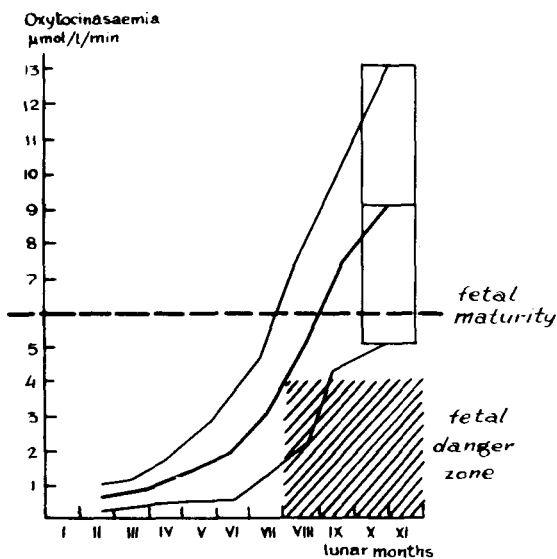


Fig. 1

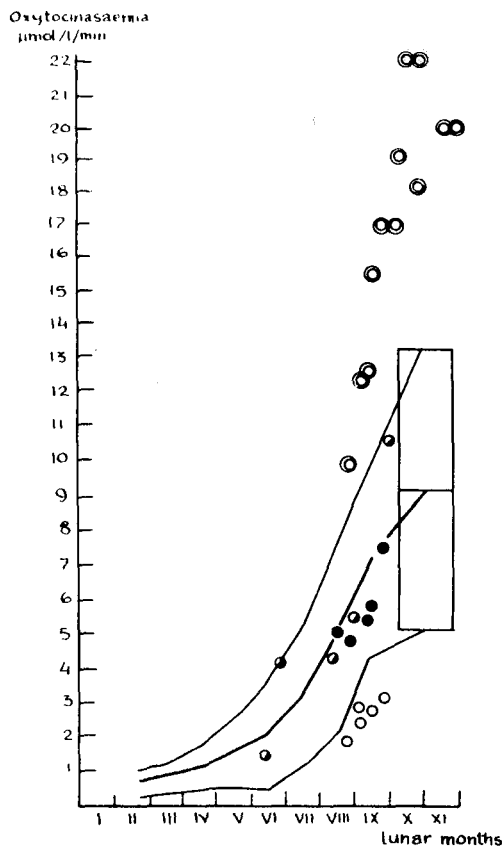


Fig. 2

weight exceeding 2500 g. But the finding of a lower level than 4 I.U., as late as the eighth lunar month of pregnancy, points to intrauterine danger for the fetus: the same is greater if no disturbances of the entire system of hypothalamic origin are found.

In other words, if oxytocinasaemia in the mother's blood is found to be lower than 4 I.U. in a gestation advanced beyond the seventh lunar month, the pregnancy has to be considered among particularly endangered pregnancies. It is worth-while mentioning that similar detection of dangers to pregnancy, though by using hormonal monitoring, i.e., the determination of somatomammotropin, was formulated by Spellacy et al. (1971a). These general principles of monitoring the development of pregnancy by means of determining oxytocinasaemia refer also to multiple pregnancy. However, fundamental differences of levels occur here in the interpretation of the observed differences of levels. It is known that the level of oxytocinase in the blood serum is statistically significantly correlated with the fetus' weight. Therefore, it often happens that the level of oxytocinase can be, and really is, higher in multiple pregnancies, if only because of the total weight of the fetuses. Our aim is to present the behavior of oxytocinasaemia in representative

cases of the multiple pregnancies observed by us. The results of the determinations shown in Fig. 2 concern four different cases of multiple pregnancy, chosen from the several thousand cases of pregnancies enzymatically monitored in our Institute.

The first case involved primipara K.Z., 28 years old, who, on the 291st day, gave birth to newborns weighing 2280 and 3250 g respectively, and with a body length of 51 and 53 cm. In this woman, in whom, from the 35th week of pregnancy on, when the oxytocinase level amounted to 7.8 I.U., 11 determinations of oxytocinase were made, the highest level (22 I.U.) was found two weeks before birth. Three days before birth the level of oxytocinase amounted to 20 I.U. This case illustrated the highest values of oxytocinase noted by us in pregnancies in general. A systematic increase of the enzyme was found, except for its relative, insignificant decrease during the last two weeks before delivery.

The second observation concerns a multipara, K.A., 39 years old, who, on the 24th week of pregnancy, gave birth to twins weighing 2360 and 1730 g respectively, with a body length of 48 and 46 cm. From the 13th week of pregnancy on, when it amounted to 1.4 I.U., the level of oxytocinase attained 10.6 I.U. four days before childbirth.

Multipara L.Z., 27 years old, gave birth, on the 240th day of pregnancy, to newborns weighing 2350 and 2500 g, with a body length of 48 and 50 cm. Four weeks before delivery, the level of oxytocinase was 5 I.U. and two days before delivery it attained its highest value, i.e., 7.4 I.U.

Primipara G.M., 21 years old, delivered on the 211th day of pregnancy. The level of oxytocinase did not exceed 4 I.U. and remained within the limit of 1.8 to 3.0 I.U.

With the exception of the first delivery (Caesarean section) all deliveries were normal and all newborns were dismissed from the Institute in a good state of health.

The data supplied show that the level of oxytocinase in multiple pregnancy should be used in drawing conclusions from the fact that there are correlations between newborn weight and oxytocinase. A level of oxytocinase exceeding 12 I.U. indicates the presence of a multiple pregnancy with high probability: in these cases, the birth of a newborn with low weight points out that a multiple pregnancy is involved.

With respect to the practical significance of the enzymatic monitoring of multiple pregnancy, the following conclusions may be drawn:

1. The determination of oxytocinase is the method of choice in monitoring multiple pregnancy. An increase in the level of the enzyme indicates a normal development of the pregnancy.
2. Although in multiple pregnancy, as a rule, the oxytocinase level is higher than in single pregnancy, there are cases with a level pointing to intrauterine fetal danger.
3. The birth of a newborn with a body weight below 2500 g, when the maternal oxytocinase level exceeds 12 I.U., points to the presence of a multiple pregnancy.