BI-DIGITAL O-RING TEST (BDORT) AND PRENATAL DIAGNOSIS

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ABSTRACT

INTRODUCTION AND AIMS:
Bi-Digital O-Ring Test (BDORT), established and developed by Prof. Y. Omura as non-invasive diagnostic method, may be very useful in fetus gender determination.
The aims of the study were:

- to evaluate the accuracy of indirect Bi-Digital O-Ring Test in determination of fetus gender and to compare the results obtained with standard methods applied in perinatology;
- to compare the value of alpha-fetus protein (AFP) level, obtained by BDORT, with the value of AFP obtained from mother's blood serum (the last one is usually done within triple test together with beta-HCG and estryol) and
- to compare the results obtained by BDORT showing pancreatic infection with standard three-hour oral glucose tolerance test (OGTT).

MATERIAL AND METHOD:
149 pregnant women were examined by indirect BDORT. The assistant during the test was female. Slides with human sexual chromosomes were used as referent substances: XX and XY. Slides were produced in the laboratory for Genetics of Mount Sinai Hospital, NYU. 15 pregnant women, between 6th and 11th week of gestational age, were examined prior chorionic villi biopsy and genetic analysis. 134 pregnant women, between 18th and 36th week of gestation, were examined by ultrasonography in order to determine fetus gender. The results obtained from indirect BDORT were compared with the fetus gender following delivery.
On the other side, reference AFP slides were used and applied over the uterus and liver of pregnant women. These results were compared with the results of serum levels of AFP. Blood for analysis was collected while women were between 14^{th} and 16^{th} gestational week of pregnancy. Also, in patients whom indirect BDORT revealed pancreatic infection, reference slides with acetylcholine (ACh) were applied; the patients showing ACh resonance at 100pg (BDORT Unit) or less, were referred to lab to perform 3-hour OGTT with 75g of glucose.

RESULTS AND DISCUSSION:
The same results of gender determination were obtained by using both BDORT, on one side, and by chorionic villi biopsy and genetic analysis, on the other in vast majority of cases. The

diagnosis was missed in three cases and some peculiar information was obtained in five cases. When test is performed by using both slides (XX and XY), the test results were negative. The same results of gender determination by using BDORT on one side and standard methods on the other, were obtained in 94.63%.

Reference slides with AFP showed the level of 4ng (BDORT Unit) which is connected with normal pregnancy. In 2 cases out of 50 pregnant women, AFP reference slides resonated over the uterus at increased level of 70 and 90ng (BDORT Unit), while over the liver, level was 4ng (BDORT Unit) in both cases. Also, in the same patients, BDORT showed liver infection with CMV. Blood analysis performed in these two patients, revealed increased level of IgG CMV which was not the case with IgM. Ultrasonography showed normal morphology of fetuses; the results of amniocentesis and genetic analysis were within physiological frames and pregnancies were continued. The deliveries were normal, babies were healthy with somewhat less body mass.

BDORT showed infection of pancreas in 9 out of 128 pregnant women. Since pancreatic infection results in lowering of ACh level over pancreas, reference ACh slides also were used. The resonance with ACh slides was obtained at 100pg (BDORT Unit) and less. Those patients referred to lab where 3-hour lasting OGTT was performed with 75g of glucose. The test was positive revealing glucose intolerance in 8 patients (89%).

In one patient, BDORT revealed asymptomatic infection with Toxoplasma gondii. This result was confirmed by routine blood analysis showing increased IgM level.

In two patients, BDORT revealed infection with Chlamydia trachomatis. Cervical smear and serological analysis showed no presence of IgG, IgM, and IgA. However, Chlamydia trachomatis was obtained and confirmed in amniotic fluid following amniocentesis. This finding was put in connection with the presence of chronic endometritis prior pregnancy in those two women.

CONCLUSION:

This study results indicate that indirect BDORT may be applied as a screening method to determine fetus gender. This fact will raise the other issue, namely, whether indirect BDORT may be applied in screening of various genetic syndromes and genetic diseases when slides, with the proper referent substances, are used. Also, the finding of non-specific hepatitis caused by CMV, can be possible cause of increased level of AFP during pregnancy. AFP at the level of 4ng over the uterus of pregnant woman shows that there is no fetus anomaly. Therefore, well trained physicians may screen for possible changes in fetus by using BDORT and AFP level.

Regarding pancreatic infection and ACh, BDORT showed that, besides normal fasting blood glucose level, certain changes in sugar metabolism may be present and, whether ACh is lowered, 3-hour OGTT is recommended. By referring to lab patients with normal fasting blood glucose level and lowered ACh level, physicians may reveal patients with glucose intolerance and preventive measures may be applied (appropriate diet, physical activities, more frequent check-ups of woman and fetus etc.).

Generally, by using indirect BDORT as non-invasive and safe method in pregnant women, physicians may detect asymptomatic infections (such is Toxoplasma gondii infection) and changes (such is glucose intolerance) which, in turn, may result in adequate approach to each patient. This will enable a wide range of preventive measures to be undertaken and, in that way, the onset of certain diseases will be prevented.

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