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RESEARCH NOTE

Thromboelastography in Women with Pathological Pregnancies: a Preliminary Study

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ABNORMALITIES during pregnancy are regarded as pathological pregnancy. Early detection of anomalies is urgent to take measures as soon as possible to prevent serious pregnancy complications. Procoagulant-anticoagulant imbalance is often the pathological basis of many pathological pregnancy conditions, leading to a hypercoagulable state. We compared the thromboelastographic parameters between pathological pregnancy and normal pregnancy patients, evaluated the value of thromboelastography in early detecting pathological pregnancy and predicting postpartum hemorrhage.

Altogether 190 women with pathological pregnancies (study group) and 75 women of normal pregnancies at the same period (control group) were recruited from July 2010 to September 2012 in Navy General Hospital of PLA. The study group included 45 cases of preeclampsia (20 were mild preeclampsia and 25 were severe preeclampsia), 50 cases of gestational diabetes mellitus (GDM), 70 cases of pregnancy hypercoagulable state, and 25 cases of deep venous thrombosis. The diagnosis of preeclampsia was in accordance with American College of Obstetrics and Gynecology guidelines and criteria established in comparable studies. The diagnosis of GDM was in accordance with the International Association of Diabetes in Pregnancy Study Group Recommendations. The screening and diagnosis of GDM was based on the result of 75 g 2-hour oral glucose tolerance test. The hypercoagulable state patients in this

study showed a D-dimer level 3 times the upper limit of reference range (16-300 $\mu\text{g/L}$) but the conventional coagulation tests were normal. The women with deep venous thrombosis were diagnosed with ultrasound. The blood samples of the study group were taken before any intervention once diagnosed. Obstetric complications were excluded for the patients in control group. Medical and surgical complications were excluded in both groups. All the enrolled patients took no drugs affecting coagulation in 2 weeks. The parameters of thromboelastography in the patients included reaction time (R), clot formation time (K), clot formation rate (α angle), maximum amplitude (MA), and coagulation index (CI). Postpartum hemorrhage was observed.

The parameters of the control group were within the reference ranges. The K time was significantly shorter in the study group than in control group ($P=0.027$). The α angle ($P=0.011$), MA ($P=0.045$), and CI ($P=0.036$) were significantly higher in study group. No significant differences in the 5 variables were observed between the control and the preeclampsia groups. The thromboelastographic parameters in the GDM patients showed hypercoagulable state changes compared with the control group, but the differences were not significant. The K time was shorter, and α angle, MA, and CI higher in hypercoagulable state group than in the control group (all $P<0.01$). Thrombosis group had a shorter R time and a larger α angle compared with the control group (both $P<0.05$).

The incidence of postpartum hemorrhage was 8.4% (16/190) in the study group, 5.3% (4/75) in the control

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group. The 16 cases of postpartum hemorrhage in the study group were severe preeclampsia (4/45, 8.9%), pregnancy hypercoagulable state (9/70, 12.9%), and deep venous thrombosis (3/25, 12%). The level of D-dimer was over 1200 $\mu\text{g/L}$ in 9 women with pregnancy hypercoagulable state. The MA of preeclampsia patients in postpartum hemorrhage group was significantly higher than that in non-hemorrhage group ($P<0.05$). In hypercoagulable state patients, K time was significantly shorter, and α angle,

MA, and CI significantly higher in postpartum hemorrhage group compared with non-hemorrhage group ($P<0.05$). The R time was shorter and MA was higher in thrombosis patients having postpartum hemorrhage than in non-hemorrhage group ($P<0.05$).

In conclusion, thromboelastography could identify the changes of pathological pregnancy coagulation fast and accurately, helping to predict the risk of postpartum hemorrhage.

ERRATUM

The first author of the original article "Breast Milk Lead and Cadmium Levels in Suburban Areas of Nanjing, China" (Vol. 28, No. 1) detected and reported an error in their data after publication. In the second paragraph under the subtitle "Pb and Cd levels in breast milk" on pages 9-10, the highest Cd level and the following description should be (underlined are corrected data):

The highest Cd level in the samples was 39.0 $\mu\text{g/L}$. The mother was 21 years old, and this was her first pregnancy. The baby was delivered by vaginal birth, weighing 3455 g. There was no history of chronic disease. She was diagnosed with anemia during the pregnancy but did not take iron supplements. The maternal hemoglobin level on the first postpartum day was 8.8 g/dL. She had lived in a suburban area since childhood. The heating in her former childhood house was provided by a coal stove. Her family currently lived in a 24-year-old house, heated by a coal stove as well, and close to the main road (< 220 m).