INTRODUCTION

Many investigators led to the conclusion that fetal behavioral patterns directly reflect developmental and maturational processes of fetal nervous system (CNS), and may make possible to distinguish between normal and abnormal brain development as well as prenatal diagnosis of neurological impairment.

The arrival of three and four-dimensional ultrasound (3D/4D US) made possible to study fetal behavioral patterns.

Kurjak’s Antenatal Neurodevelopmental Test (KANET) is the first prenatal based on 3D/4D ultrasound examination of the fetus, that could be used for the evaluation and prediction of fetal neurological status.

MATERIALS AND METHODS

During a period of almost two months, between November and December of 2014, KANET was applied in 51 singleton pregnancies between 28th and 38th weeks of gestation.

The study participants were those who came for an ultrasound exam in a private fetal medicine clinic, in Porto Alegre, Brazil. Were included 17 high-risk and 34 low-risk pregnancies as controls. The inclusion criteria for high-risk pregnancies are presented in the Table I.

OBJECTIVES

The primary outcome was the usefulness of KANET to identify fetuses from high-risk pregnancies at neurological risk. Then we want to compare the scores between the high-risk and low-risk group and, also, compare the KANET results between the high-risk group and subgroups of fetuses.

We also want to see the feasibility of using this test on a larger scale in Brazil.

RESULTS

The final results of KANET study, only high-risk patients showed abnormal scores (17.6%). 80.6% of high-risk patients had borderline results while 85.3% of low-risk patients were normal, both statistically significant.

Table IV shows the allocation of fetuses according to KANET.

The comparison of individual parameters for KANET score 0, between fetuses of low and high-risk pregnancies, there was a statistically significant difference for isolated head anteflexion, cranial sutures and head circumference, isolated hand movement or hand to face movements, isolated leg movement and fingers movements. There was no difference between isolated eye blinking, facial movements or mouth opening and gestalt perception of general movements.

On other hand, for KANET score 2, there was significant difference between all the parameters. Table V shows the comparison of individual parameters in KANET.

For the three abnormal KANET results (score between 0 to 5), one was related to pregnancy condition (preeclampsia) and two were related to fetal condition (trisomy 13 and Intrauterine growth restriction).

Table VI presents individual participants assigned to the high-risk group according to prenatal diagnosis.

CONCLUSIONS

KANET is the first prenatal neurological screening test based on 4D US technique. We believe that KANET can separate serious structural problems associated with brain injuries.

Therefore, our aim is to assess whether KANET really has the potential for prenatal detection of serious neurological problems as well as other causes.

This successful preliminary study of KANET in Brazil showed important differences in fetal behavior between the low and high-risk pregnancies, which is in agreement with other studies.

We also found that the vast majority of high-risk pregnancies had borderline KANET. On the other hand, low-risk pregnancies most often presented normal results.

REFERENCES