A pre-eclampsia risk prediction model based on maternal characteristics and serum markers in twin pregnancy

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Introduction
The purpose of this study was to develop preeclampsia (PE) risk prediction model based on maternal characteristics and serum markers at the first and second trimester in the twin pregnancy.

Method
Between January 2005 and September 2017, we retrospectively reviewed medical records of 532 twin pregnant women who underwent maternal serum integrated test and gave birth at a Bundang CHA medical center. Maternal serum pregnancy-associated plasma protein A(PAPP-A) was determined at 10+0 to 13+0 weeks and the serum alpha-fetoprotein (MSAFP), human chorionic gonadotrophin (hCG), unconjugated estriol (uE₃) and inhibin A were assayed at 14+0 to 22+0 weeks. We reviewed all antenatal primary screening records and assessed the relationships of maternal characteristics and serum markers by using multiple logistic regression analysis.

Results
The study included 35 patients who diagnosed PE and a control group consisting of the other 497 patients in twin pregnancy. the gestational age and placenta weight at delivery were significantly different between groups (p <0.001, p=0.005, respectively) but PAPP-A, MSAFP and uE₃ did not differ significantly between two groups. Among the maternal serum markers, Inhibin A value was significantly higher in women with PE compared to those without preeclampsia (p <0.001). In addition, we predicted the PE using maternal age, BMI, uE₃, and inhibin A which were achieving an area under the curve of 0.73 overall, in a combined multivariate prediction model of PE in twin pregnancy.

PAPP-A A risk prediction model of PE which combined maternal age, BMI, uE₃ and inhibin A was better early predictors than any individual marker and these factors are more useful as there is no additional examination for early diagnosis women with PE in twin pregnancy.