عنوان مقاله:

First-trimester Combined Screening for Trisomies 21, 18, and 13 by Three Closed Chemiluminescence Immunoassay (Analyzers (an Experiment on Iranian Pregnant Women

محل انتشار:

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خلاصه مقاله:

Background: Pregnancy-associated plasma protein-A (PAPP-A) and free β-human chorionic gonadotropin (free β-hCG) as valuable biochemical biomarkers are used to screen down syndrome, Edwards syndrome, and Patau syndrome in the first trimester of pregnancy. Closed immunoassay analyzers are regarded as sophisticated platforms to measure biochemical biomarkers. This study compared the performance of three chemiluminescence analyzers when used for combined screening.Methods: The present cross-sectional study was conducted on 371 pregnant women within the age range of 20-47 years during 11+0 to 13+6 weeks of pregnancy referring to Dena laboratory in Tehran, Iran, during July 2018 and August 2018 using random selection. The biochemical biomarkers of PAPP-A and free β-hCG were assayed on Cobas, Immulite, and Maglumi analyzers. Benetech software as a commercial screening software was used to calculate the risks of trisomy 21 (T21), trisomy 18 (T18), and trisomy 13 (T13). Deming regression, nonparametric spearman analysis, analysis of variance, and Chi-square test were performed to analyze the data.Results: For the screening population, although the three systems well correlated to PAPP-A and free β-hCG, the values of Maglumi were slightly higher than those reported for Cobas and Immulite. The multiples of the median (MoM) of PAPP-A and free β-hCG had a significant correlation on three platforms. There were no significant differences between the calculated risks of T21, T18, and T13 on the three systems. The sensitivity for all systems was reported as 50%. In addition, specificity and negative predictive value (NPV) were higher than 99% and 95%, respectively. Positive predictive value (PPV) was reported as less than 50%.Conclusion: The obtained results of the present study demonstrated that there were significant correlations between three different systems in terms of PAPP-A and free β-hCG values and MoMs. The sensitivity of all systems for all trisomies was 50%; however, the specificity of all systems was almost the same. The best PPV and NPV for T21 were on Cobas, Immulite, and Maglumi, respectively. The PPV and NPV of all systems for T18/13 were almost the same.

کلمات کلیدی:

Chorionic Gonadotropin, First pregnancy trimester, Pregnancy-Associated Plasma Protein-A, Risk Assessment