

Original Paper

URINE FREE BETA hCG AND BETA CORE IN PREGNANCIES AFFECTED BY DOWN'S SYNDROME

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Abstract

Urine beta core was shown in recent studies to be markedly elevated in pregnancies affected by Down's syndrome in the late second trimester. Free beta human chorionic gonadotropin (hCG) has also been shown to be the most discriminatory maternal serum marker of Down's syndrome. Since free beta hCG is rapidly cleared from the maternal circulation, we have carried out a study to evaluate whether free beta hCG is elevated in the urine of pregnancies affected by Down's syndrome and to investigate whether urine beta core or urine free beta hCG may be used as possible screening markers. Urine samples from 29 cases of Down's syndrome, three cases of trisomy 18, and 400 control pregnancies were analysed for the two prospective markers. Results were corrected for urine concentration by expressing marker concentrations at a fixed creatinine concentration and then expressing the results as multiples of the median for unaffected pregnancies of the same gestation. The median value of beta core in the Down's syndrome pregnancies was 2.35 compared with 2.47 for free beta hCG. Free beta hCG distributions were closely similar to those in maternal serum. Using free beta hCG, we predict Down's syndrome detection rates of 58 per cent at a 5 per cent false-positive rate. Using beta core, however, this rate fell to 41 per cent. Measurement of free beta hCG in urine may present a feasible route for screening pregnant populations, particularly where community-based obstetric care is the norm and/or if early first-trimester screening becomes a reality.