Is variation in copy number of the human beta defensin gene cluster associated with preterm birth?

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Abstract

Background **Increased expression of antimicrobial peptides including human beta defensins (HBD) has been reported in the amniotic fluid and vaginal secretions of women who deliver preterm. We have previously shown that these women have increased first trimester serum HBD2. The gene encoding HBD2, *DEFB4A*, is part of a defensin beta (DEFB) cluster on chromosome 8 that is variable in copy number. Increased serum HBD2 is associated with increased DEFB copy number. We aimed to test the hypothesis that variation in DEFB copy number is associated with preterm birth.**

Methods **In a retrospective, case-control study, genomic DNA and serum were extracted from blood collected from white European women at 11–13 weeks' gestation attending King's College Hospital between March 1, 2006, and Sept 30, 2010. DEFB copy number was determined by paralogue ratio test. Serum HBD2 concentration was measured by ELISA. Data were analysed with Pearson correlation (Excel, version 2010) and binary logistic regression (SPSS, version 20).**

Findings **Cases were 102 women who either delivered preterm in the index pregnancy or had a history of preterm delivery. Controls were 152 women who had had at least one previous term delivery and delivered at term in the index pregnancy; they had no history of preterm birth. Modal copy number was 4 (range 2–7). Serum was available from 140 women (30 cases, 54 controls, 56 not included in the genetic association study). Median HBD2 concentration was 761·5 pg/mL (IQR 449·6–1232·0). There was no association between DEFB copy number and preterm birth, nor was there a correlation between copy number and serum HBD2 concentration.**

Interpretation **Although variation in HBD2 protein expression in the first trimester might be useful to predict risk of preterm birth, we found no association between DEFB copy number and preterm birth. Nor did we find a correlation between DEFB copy number and serum HBD2 expression in the first trimester of pregnancy; this might be due to variation in regulatory sequences—some of which are progesterone and oestrogen sensitive—between individual copies.**

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Contributors

CJ, MB-E, NK, and DP designed the study. AS and KN recruited patients and collected samples. CJ and RA did the experiments. CJ, RA, and EH analysed the data. CJ wrote the abstract with support from MB-E, EH, and DP.

Declaration of interests

We declare no competing interests.

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Poster 53

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