

Polymorphism in the epidermal growth factor gene is associated with birthweight in Sinhalese and white Western Europeans

[Dissanayake, V.H.W.](#)^{a b d}, [Tower, C.](#)^{c e}, [Broderick, A.](#)^c, [Stocker, L.J.](#)^c, [Seneviratne, H.R.](#)^b, [Jayasekara, R.W.](#)^a, [Kalsheker, N.](#)^c, [Pipkin, F.B.](#)^d, [Morgan, L.](#)^c

^a Human Genetics Unit, Faculty of Medicine, University of Colombo, Kynsey Road, Colombo 00800, Sri Lanka

^b Department of Obstetrics and Gynaecology, Faculty of Medicine, University of Colombo, Kynsey Road, Colombo 00800, Sri Lanka

^c Division of Clinical Chemistry, Institute of Genetics, University of Nottingham, Nottingham NG7 2UH, United Kingdom

^d Division of Obstetrics, School of Human Development, University of Nottingham, Nottingham NG7 2UH, United Kingdom

^e Division of Human Development, The University of Manchester, St. Mary's Hospital, Hathersage Road, Manchester M13 0JH, United Kingdom

Abstract

Birthweight predicts health later in life and is influenced by inherited factors. We investigated the association of the c.61G > A, and c.2566G > A polymorphisms in the epidermal growth factor (EGF) gene [GenBank NM_01963] with birthweight in three groups of healthy pregnant women, and in women with pregnancies affected by fetal growth restriction (FGR). Subjects comprised 171 Sinhalese women with normal pregnancies (Group A), 64 white Western European women with normal pregnancies (Group B), 101 white Western European women with normal pregnancies and their babies (Group C) and 107 women with pregnancies affected by FGR, their partners and their babies (Group D). Maternal EGF genotypes were associated with birthweight of healthy babies of women in Groups A (P = 0.03), B (P = 0.001) and C (P = 0.01). The association persisted following adjustment for confounding by gestational age, sex, maternal weight, parity and smoking habit. The trend from heaviest to lightest birthweights in all these groups was c.61AA > c.61GA > c.61GG and c.2566GG > c.2566GA > c.2566AA. The EGF haplotype associated with lower birthweight (c.61G, c.2566A) was transmitted at increased frequency from heterozygous parents to babies affected by FGR in Group D (P = 0.02). These findings support the hypothesis that growth factors expressed by the feto-maternal unit affect birthweight, and implicates polymorphism in the EGF gene in the aetiology of birthweight variability. © The Author 2007. Published by Oxford University Press on behalf of the European Society of Human Reproduction and Embryology. All rights reserved.

