

## The impact of b-hCG on placental angiogenesis in pre-eclampsia

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### Abstrak

Banyak faktor yang mempengaruhi aktivitas angiogenesis plasenta, misalnya VEGF dan oksigenasi dalam plasenta. Pada awal kehamilan normal b-hCG meningkatkan aktivitas VEGF untuk merangsang angiogenesis. Tujuan penelitian ini adalah untuk mengetahui hubungan antara kadar b-hCG pada kultur plasenta dengan aktivitas angiogenik plasenta preeklampsia. Sampel plasenta diambil dari 10 plasenta wanita dengan preeklampsia dan 10 kontrol (wanita dengan kehamilan normal). Semua subjek bersedia berpartisipasi dalam penelitian ini dan menandatangani informed consent. Konsentrasi b-hCG dalam supernatan kultur plasenta diukur dengan Microparticle Enzyme Immunoassay (MEIA) dan aktivitas angiogenik plasenta diukur dengan mengukur migrasi sel endotel menuju eksplan plasenta (skor 0-4). Hasil menunjukkan median skor aktivitas angiogenik plasenta pada preeklampsia lebih tinggi secara bermakna dari kontrol ( $p < 0,05$ ). Konsentrasi b-hCG dalam kultur plasenta preeklampsia lebih tinggi secara bermakna dari plasenta kehamilan normal ( $p < 0,001$ ). Konsentrasi b-hCG mempunyai korelasi positif dengan aktivitas angiogenik plasenta baik pada preeklampsia ( $r = 0,50$ ) maupun kehamilan normal ( $r = 0,57$ ). Walaupun korelasi ini lemah, bagaimanapun juga b-hCG merupakan salah satu faktor yang mempengaruhi aktivitas angiogenik plasenta. (Med J Indones 2004; 14: 67-70)

*Numerous factors, such as VEGF and intra-placental oxygenation, can influence placental angiogenic activity. Early in the normal gestation period, b-hCG enhance VEGF activity to induce angiogenesis. The aims of this study were to identify the correlation between b-hCG concentration in placental culture and placental angiogenic activity in pre-eclampsia. Ten placenta samples from women with pre-eclampsia and 10 from controls (normal pregnancy) were collected. All subjects agreed to participate in this study and signed an informed consent form. b-hCG concentration in supernatant of placental culture was measured by Microparticle Enzyme Immunoassay (MEIA) and placental angiogenic activity was measured by endothelial cell migration toward placental explant (score 0-4). The results showed that the median score of placental angiogenic activity in pre-eclampsia was significantly higher than in normal pregnancy ( $p < 0.05$ ). Concentration of b-hCG in pre-eclampsia was significantly higher than in normal pregnancy ( $p < 0.001$ ). hCG concentration in placental culture was positively correlated to placental angiogenic activity both in pre-eclampsia ( $r = +0.50$ ) and in normal pregnancy ( $r = +0.57$ ). Although the correlations were weak, b-hCG is considered one of the factors that influence placental angiogenic activity. (Med J Indones 2004; 14: 67-70)*