

# Pengaruh Suplementasi Vitamin D3 5000 IU/hari Terhadap Kadar 25(OH)D, Placental Growth Factor (PIGF) Serum Maternal dan PI A. Uterina pada Wanita Hamil Trimester Pertama dengan Risiko Tinggi Preeklamsia = Effect of Vitamin D3 Supplementation 5000 IU/day on Levels of Maternal Serum 25(OH)D, Placental Growth Factor (PIGF) and Pulsatility Index Uterine Artery in First Trimester Pregnant Women at High Risk of Preeclampsia

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## Abstrak

Latar Belakang : Preeklamsia terjadi akibat adanya gangguan pada proses implantasi dan desiduasasi pada awal kehamilan. Vitamin D memainkan peranan penting pada proses desiduasasi, implantasi dan plasentasi. Penelitian terbaru menunjukkan bahwa kadar 25(OH)D yang rendah dalam serum merupakan faktor risiko preeklamsia. Bukti terbaru mendukung peran suplementasi vitamin D yang dimulai pada saat sebelum, awal dan selama kehamilan dalam mengurangi risiko preeklamsia. Tujuan penelitian ini adalah untuk mengetahui peranan suplementasi vitamin D 5000 IU/hari pada implantasi dan plasentasi melalui pemeriksaan PI A. Uterina dan PIGF serum maternal pada wanita hamil trimester pertama.

Metode : Uji klinis paralel acak tersamar tunggal. Subjek wanita hamil usia 7-11 minggu yang dibagi 2 kelompok, yaitu normal dan risiko tinggi berdasarkan kriteria risiko tinggi ACOG. Tiap kelompok dibagi lagi menjadi kontrol yang hanya mendapat obat standar dan perlakuan yang mendapat vitamin D 5000 IU/hari. Semua pasien diperiksa kadar 25(OH)D awal, kemudian diberikan intervensi selama 1 bulan dan diperiksa ulang kadar 25(OH)D akhir, PIGF serum maternal dan PI. A. Uterina. Menilai perbandingan kenaikan kadar 25(OH)D, PIGF, dan PI A. Uterina diantara semua kelompok

Hasil : Subjek awal berjumlah 92 orang, dieksklusi sebanyak 12 orang dan tersisa 80 subjek yang menyelesaikan penelitian. Semua subjek mengalami defisiensi vitamin D. Dibandingkan pasien kontrol kenaikan kadar 25(OH)D pada kelompok perlakuan normal masih lebih tinggi dibandingkan dengan kelompok perlakuan risiko tinggi yaitu  $12,33 \pm 6,26$  ng/mL dan  $10,45 \pm 5,09$  ng/mL dengan nilai  $p < 0,001$ . Kelompok normal, penurunan PI A. Uterina dibandingkan antara kontrol dan perlakuan bermakna sebesar  $0,57 \pm 0,36$  dan  $1,08 \pm 0,29$  ( $p < 0,001$ ) sedangkan kadar PIGF juga berbeda bermakna antara kontrol ( $84,27 \pm 10,02$ ) dan perlakuan ( $107,87 \pm 31,97$ ) dengan nilai  $p = 0,005$ . Pada kelompok risiko tinggi, perbandingan rerata kadar PIGF pada kontrol dan perlakuan berbeda bermakna yaitu  $37,59 \pm 9,67$  dan  $70,53 \pm 18,32$  nilai  $p < 0,001$ . Pada pasien intervensi baik kelompok normal dan risiko tinggi rerata penurunan PI A. Uterina ( $1,08 \pm 0,29$  vs  $0,43 \pm 0,26$ ; nilai  $p < 0,001$ ) dan kadar PIGF ( $107,87 \pm 31,97$  vs  $70,53 \pm 18,32$ ; nilai  $p < 0,001$ ) berbeda bermakna.

.....Background : Preeclampsia occurs due to disruption of the implantation and decidualization in early pregnancy. Vitamin D plays an important role in decidualization, implantation, and placentation. Recent evidence supports the role of vitamin D supplementation initiated before, early and during pregnancy in reducing the risk of preeclampsia. The study aim is to determine the effect of vitamin D supplementation of 5000 IU/day on implantation and placentation through examination of Uterine Artery PI (UtA-PI) and maternal serum PIGF in first trimester pregnant women.

Methods: Using a single-blind, randomized parallel clinical trial. Subjects were pregnant women 7-11 weeks gestation and divided into 2 groups, normal and high risk, based on ACOG preeclampsia high risk criteria. Each group was further divided into controls who received the standard drug and interventions who received 5000 IU of vitamin D/day. Subjects were examined for 25(OH)D levels before and after the 1 month intervention, including maternal serum PIGF and UtA-PI levels. Both groups were compared for the difference of 25(OH)D levels, mean PIGF, and UtA-PI.

Results: We have 80 subjects who have vitamin D deficiency. The normal and high-risk intervention group showed the increase of 25(OH)D levels,  $12.33 \pm 6.26$  ng/mL and  $10.45 \pm 5.09$  ng/mL with  $p < 0.001$  accordingly. For the normal group, the decrease of UtA-PI compared between control and intervention was significant  $0.57 \pm 0.36$  and  $1.08 \pm 0.29$  ( $p < 0.001$ ) while PIGF levels were also significantly different between control ( $84.27 \pm 10.02$ ) and intervention ( $107.87 \pm 31.97$ ) with  $p < 0.05$ . While in high-risk group, the PIGF levels of control and intervention were significantly different,  $37.59 \pm 9.67$  and  $70.53 \pm 18.32$  with  $p < 0.001$ . In intervention patients, both normal and high-risk groups, the decrease of UtA-PI ( $1.08 \pm 0.29$  vs  $0.43 \pm 0.26$ ;  $p < 0.001$ ) and PIGF levels ( $107.87 \pm 31.97$  vs  $70.53 \pm 18.32$ ;  $p < 0.001$ ) were significantly different.