

ABSTRAK

Pengaruh Pravastatin Terhadap Kadar Serum *Nitric Oxide (NO)* Ibu Hamil Risiko Tinggi Preeklamsia (*Randomized Controlled Trial* di RSUD Dr. Soetomo dan RS Universitas Airlangga Surabaya)

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Latar Belakang: Preeklamsia menjadi penyebab kedua tertinggi kematian ibu di Indonesia dengan tren cenderung meningkat tiap tahunnya. Ketidakseimbangan angiogenesis dan disfungsi endotel berperan utama dalam preeklamsia. Disfungsi endotel ditandai ketidakseimbangan vasodilator dan vasokonstriktor, yaitu penurunan kadar NO sebagai vasodilator poten. Statin mampu mengembalikan disfungsi endotel dengan merestorasi NO melalui penghambatan aktivasi jalur Rho/ROCK dan peningkatan jalur PI3K-Akt. Akibatnya, aktivitas dan ekspresi eNOS meningkat sehingga kadar NO dalam serum meningkat.

Tujuan: Menganalisis pengaruh pravastatin terhadap kadar serum NO pada ibu hamil risiko tinggi preeklamsia.

Metode: Penelitian eksperimental dengan desain uji klinis randomisasi terbuka di RSUD dr. Soetomo dan RS Universitas Airlangga Surabaya pada ibu hamil risiko tinggi preeklamsia yang memenuhi kriteria inklusi-eksklusi. Sampel dibagi menjadi dua kelompok. Kelompok kontrol mendapat aspirin 80 mg/hari dan kalsium 1 g/hari (terapi rutin). Kelompok perlakuan mendapat terai rutin dan pravastatin 2x20 mg dimulai setelah 14 minggu. Kadar serum NO diukur saat awal rekrutmen dan dalam 24 jam sebelum persalinan. Data dianalisis dengan SPSS.

Hasil: Terdapat 34 subyek penelitian yang dilakukan randomisasi menjadi dua kelompok dengan jumlah sampel yang sama. Didapatkan peningkatan kadar NO yang signifikan ($p=0,044$) sesudah terapi pada kelompok perlakuan, sedangkan pada kelompok kontrol didapatkan penurunan kadar NO yang signifikan ($p=0,002$). Selisih kadar NO pada kelompok perlakuan dan kontrol juga didapatkan perbedaan yang signifikan.

Kesimpulan: Pemberian pravastatin pada ibu hamil yang berisiko tinggi preeklamsia dapat merestorasi kadar NO sehingga kadar serum NO meningkat. Dengan meningkatnya kadar serum NO yang merupakan vasodilator poten diharapkan terjadinya restorasi keadaan disfungsi endotel. Peningkatan kadar serum NO ini dapat mencegah keadaan vasokonstriksi sistemik sehingga manifestasi preeklamsia dapat dicegah.

Kata kunci: pravastatin, *nitric oxide*, aspirin dosis rendah

ABSTRACT

Effect of Pravastatin on Nitric Oxide Serum Levels (NO) in Pregnant Women with High Risk Preeclampsia (Randomized Controlled Trial at Dr. Soetomo General Hospital and Airlangga University Hospital Surabaya)

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Background: Preeclampsia is the second highest cause of maternal death in Indonesia. The imbalance of angiogenesis and endothelial dysfunction plays a major role in the pathogenesis of preeclampsia. Endothelial dysfunction is characterized by imbalance of vasodilators and vasoconstrictors. There is a decrease in NO levels which is a potent vasodilator. Statins can restore endothelial dysfunction by restoring NO through inhibition of Rho/ROCK pathway activation and induction of PI3K-Akt pathway. As a result, the activity and expression of eNOS increases so that NO level in serum increase.

Objective: To determine pravastatin's effect on serum NO levels in pregnant women at high risk preeclampsia.

Method: An experimental research, open randomization-controlled trial with consecutive sampling that conducted at dr. Soetomo General Hospital and Airlangga University Hospital Surabaya. Women between 12-20th weeks gestation divided into 2 groups randomly. The control group received aspirin 80 mg/day and calcium 1 g/day. Pravastatin 2x20 mg orally added in the treatment groups that began after 14 weeks. Serum NO level was measured at the start of recruitment and within 24 hours before delivery. Data were analyzed using SPSS.

Results: There were 34 subject's study who were randomized into two groups in the same number. There was a significant increase in NO levels ($p=0.044$) after therapy in the treatment group, whereas in the control group there was a significant decrease in NO levels ($p=0.002$). The difference in NO levels between two groups also found a significant difference.

Conclusion: Pravastatin in pregnant women at high risk preeclampsia can restore NO levels so that serum NO levels increase. By increasing serum NO levels which are potent vasodilators, it is hoped that it can restore endothelial dysfunction. Increasing in serum NO levels can prevent systemic vasoconstriction so that the manifestations of preeclampsia can be prevented.

Keywords: pravastatin, nitric oxide, low-dose aspirin