Hubungan Polimorfisme Gen Nitric Oxide Synthase 2 dengan Kategori Nitrogen Oksida Udara Respirasi pada Pasien Asma Terkontrol dan Tidak Terkontrol = Relationship of Nitric Oxide Synthase 2 Gene and Fractional Exhaled Nitric Oxide Value in Controlled and Uncontrolled Asthma Patients

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Abstrak

Latar Belakang: Berbagai polimorfisme gen nitric oxide synthase 2 (NOS2) telah diteliti dalam kaitannya dengan penyakit asma dengan pola yang bervariasi, bergantung pada ras dan negara. Beberapa di antaranya menunjukkan hubungan yang bermakna dengan asma atau penanda hayati asma, misalnya polimorfisme Ser608Leu diketahui berhubungan dengan keparahan asma. Penelitian ini bertujuan menganalisis hubungan antara polimorfisme gen NOS2 Ser608Leu dan fractional exhaled nitric oxide (FeNO) pada pasien asma terkontrol dan tidak terkontrol. Metode: Penelitian ini adalah penelitian observasional dengan desain potong lintang. Subjek penelitian adalah pasien berusia dewasa di Klinik Asma-PPOK RS Persahabatan Pusat Respirasi Nasional yang direkrut secara total sampling. Kontrol asma dinilai dengan Asthma Control Test (ACT), pengukuran FeNO dilakukan dengan menggunakan alat monitor FeNO dan pemeriksaan polimorfisme dilakukan dengan teknik PCR-RFLP menggunakan DNA dari sampel darah perifer. Hasil: Sebagian besar subjek penelitian berjenis kelamin perempuan (70,9%), tergolong obesitas (50,9%), bukan perokok (60,0%) dan berdomisili di Jakarta Timur (60,0%). Sekitar 49,1% subjek penelitian mendapatkan kortikosteroid inhalasi dengan dosis jika perlu-rendah, diikuti oleh dosis sedang sebesar 41,8% subjek penelitian. Terdapat 40,0% subjek penelitian dengan kepatuhan berobat (adherence) yang baik. Berdasarkan skor ACT, 56,4% tergolong asma terkontrol. Frekuensi nilai FeNO yang tergolong rendah pada asma tidak terkontrol sebesar 12,7% total pasien sedangkan pada asma terkontrol sebesar 20,0% total pasien. Frekuensi nilai FeNO yang tergolong meningkat pada asma tidak terkontrol sebesar 30,9% total pasien sedangkan pada asma terkontrol sebesar 36,4% total pasien. Hasil uji multivariat regresi logistik variabel jenis kelamin, riwayat merokok, kepatuhan penggunaan inhaler, kontrol asma dan polimorfisme gen NOS2 Ser608Leu juga tidak menunjukkan hubungan yang bermakna antara polimorfisme gen NOS2 Ser608Leu dan peningkatan nilai FeNO (p = 0,629, OR 0,741, IK95% 0,219-2,507, aOR 0,971, IK95% 0,232-4,070). Kesimpulan: Tidak terdapat hubungan yang bermakna antara genotip gen NOS2 dan kategori FeNO pada pasien asma terkontrol dan tidak terkontrol di RS Persahabatan Pusat Respirasi Nasional.
.....Background: Various polymorphisms of nitric oxide synthase 2 (NOS2) had been studied in asthma which showed varied patterns among race and countries. Several NOS2 polymorphisms showed significant association with asthma or its biomarker, e.g. Ser608Leu polymorphism was associated with asthma severity. This research aims to analyse the relationship of NOS2 Ser608Leu polymorphism and fractional exhaled nitric oxide (FeNO) in controlled and uncontrolled asthma patients. Methods: This was observational research with cross-sectional design. Subjects were adult patients in Asthma-COPD Clinics of Persahabatan Hospital National Respiratory Center who were recruited using total sampling. Asthma control was assessed with Asthma Control Test (ACT), FeNO testing were performed using FeNO monitor and polymorphism testing were performed with PCR-RFLP using DNA from peripheral blood samples. Results:

Most subjects were female (70.9%), obese (50.9%), non-smoker (60.0%) and living in East Jakarta (60.0%). About 49.1% subjects were taking as needed-low dose of inhaled corticosteroids (ICS), 41.8% subjects were taking medium dose of ICS. About 40.0% subjects had good adherence. Based on ACT score, 56.4% were controlled asthma. Low FeNO value were found in 12.7% of total patients in uncontrolled asthma and 20.0% of total patients in controlled asthma patients. Increased FeNO value were found in 30.9% of total patients in uncontrolled asthma patients and 36.4% of total patients in controlled asthma patients. Logistic regression of gender, history of smoking, adherence to inhaler, asthma control and Ser608Leu polymorphism of NOS2 did not show significant association between NOS2 polymorphism and increased FeNO ($p = 0.629$, OR 0.741, 95% CI 0.219-2.507, aOR 0.971, 95% CI 0.232-4.070). Conclusion: Genotypes of NOS2 were not significantly associated with increased FeNO value in controlled and uncontrolled asthma patients of Persahabatan Hospital National Respiratory Center.