

Relationship between sputum induction nitric oxide level and asthma control level in asthma outpatient clinic

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Abstract

Background

Asthma is heterogenous disease characterized by chronic inflammation of airway. The aim of asthma management is to reach and maintain disease control without any side effect of therapy. GINA categorized asthma control level into 3 levels, well controlled, partly controlled, and uncontrolled. Studies showed significant increased of NO level in patients with inflammation like asthma. NO level in healthy people and asthma patients were different, but there was no information about NO level in sputum related with asthma control level in RSUD Dr Soetomo Surabaya

Objective

To assess relationship between sputum induction NO level and asthma control level.

Methods

This study was a cross sectional analytic. Study was held in asthma outpatient clinic RSUD dr Soetomo Surabaya by using consecutive sampling. Thirty samples who met inclusion an exclusion criterias were assessed their asthma control level by ACT and NO level were measured.

Results

Samples with well controlled asthma is 4 patients (13,3%), partly controlled 8 (26,7), uncontrolled 18 (60,0%). Mean of asthma control was $18,3 \pm 4,2$ with minimum score 8 and maximum score of 25. Mean of sputum induction NO level was $92,043 \pm 29,04 \mu\text{M}$ with minimum level $14,566 \mu\text{M}$ and maximum level $138,350 \mu\text{M}$. Statistic test showed significant negative relationship between sputum induction NO level and asthma control level ($p < 0,05$).

Conclusion

Sputum NO test can be used to determine asthma control level.

Keywords: asthma, sputum induction NO level, asthma control level.

Hubungan antara Kadar *Nitric Oxide* (NO) Sputum Induksi dan Tingkat Kontrol Asma pada Penderita Asma Rawat Jalan

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Abstrak

Latar belakang

Asma merupakan penyakit heterogen dengan karakteristik inflamasi kronis saluran napas. Tujuan penatalaksanaan asma adalah untuk mencapai dan memelihara tingkat kontrol penyakit tanpa efek samping terapi. *Global Initiative for Asthma* (GINA) membagi penilaian kontrol asma menjadi 3 tingkat yaitu *well controlled*, *partly controlled* dan *uncontrolled*. Pada penelitian didapatkan kadar NO meningkat secara bermakna pada penderita dengan inflamasi seperti asma. Kadar NO pada orang normal dan penderita asma berbeda, namun belum diketahui kadar NO sputum dihubungkan dengan tingkat kontrol asma khususnya di RSUD Dr Soetomo Surabaya.

Tujuan

Mengetahui hubungan antara kadar NO sputum induksi dan tingkat kontrol asma.

Metode

Rancangan penelitian adalah analitik *cross sectional*. Penelitian dilaksanakan di poli Asma RSUD Dr. Soetomo Surabaya secara *consecutive sampling*, 30 subyek penelitian yang memenuhi kriteria inklusi dan eksklusi dinilai kontrol asmanya dengan ACT kemudian dilakukan pengukuran kadar NO.

Hasil

Pada penelitian ini didapatkan subyek dengan tingkat kontrol asma terkontrol penuh 4 orang (13,3%), terkontrol sebagian 8 orang (26,7%), tidak terkontrol 18 orang (60,0%). Rerata tingkat kontrol asma adalah $18,3 \pm 4,2$ dengan skor ACT terendah 8 dan skor ACT tertinggi 25. Rerata kadar NO sputum induksi subyek penelitian adalah $92,043 \pm 29,040 \mu\text{M}$, dengan kadar NO terendah $14,566 \mu\text{M}$ dan kadar NO tertinggi adalah $138,350 \mu\text{M}$. Hasil uji statistik terdapat hubungan negatif yang bermakna antara kadar NO sputum induksi dengan tingkat kontrol asma ($p < 0,05$).

Kesimpulan

Pemeriksaan kadar NO sputum dapat dipakai sebagai indikator dalam menentukan tingkat kontrol asma.

Kata kunci: Asma, kadar NO sputum induksi, tingkat kontrol asma