

Hubungan antara derajat obstructive sleep apnea (osa) dengan inflamasi menggunakan fractional-exhaled nitric oxide (feno) pada penderita asma persisten rawat jalan = The Relationship between obstructive sleep apnea (osa) and inflammation applying fractional-exhaled nitric oxide (feno) among persistent asthmatic outpatients

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Abstrak

Pendahuluan: Asma merupakan suatu penyakit yang bersifat heterogen dan ditandai oleh inflamasi jalan napas kronik dengan gejala mengi, sesak napas, dada terasa berat, dan batuk yang bersifat bervariasi dalam intensitas dan waktu serta disertai dengan keterbatasan aliran udara ekspirasi yang bervariasi. Obstructive sleep apnea (OSA) ditandai dengan kolaps berulang jalan napas atas saat tidur yang menyebabkan berkurang atau berhentinya aliran udara walaupun sedang dalam keadaan bernapas yang dapat mengakibatkan gangguan pertukaran gas secara intermiten dan tidur yang terganggu. Berbagai studi sebelumnya telah mendapatkan hubungan antara asma dan OSA akibat keparahan asma yang diderita.

Tujuan: Mengetahui perbedaan keadaan inflamasi dengan penilaian kadar fractional- exhaled nitric oxide (FeNO) di antara kelompok derajat obstructive sleep apnea (OSA) pada penderita asma persisten rawat jalan.

Metode: Penelitian ini telah melibatkan sebanyak 13 orang penderita asma persisten sedang yang berobat di poli asma yang menjalani skrining kuesioner STOP-BANG dan spirometri, kemudian dilanjutkan dengan pemeriksaan polysomnography dan pengukuran FeNO.

Hasil: Pasien asma persisten sedang didominasi oleh pasien perempuan dengan rerata usia 48,38±12,494 tahun. Sebanyak 53,85% pasien memiliki berat badan obese dengan rerata 28,67±7,385 kg/m². Median skor ACT 17 (7-23) dengan 61,46% pasien memiliki skor ACT yang tidak terkontrol. Rerata nilai VEPI prediksi 70,38±20,230% dengan 61,54% pasien menunjukkan obstruksi sedang. Rerata rasio VEPI/KVP 72,85±12,681% dengan 53,85% pasien menunjukkan rasio VEPI/KVP obstruksi. Median skor STOP-BANG 4 (3-

6) dengan 53,85% pasien menunjukkan risiko sedang. Rerata kadar FeNO 29,62±9,152 ppb dengan 76,92% pasien memiliki kadar FeNO 25-50 ppb. Rerata AHI 11,39±18,222 kejadian/jam dengan 76,92% pasien menunjukkan AHI derajat ringan. Pasien asma persisten sedang dominan menunjukkan kadar FeNO 25-50 ppb dengan skor ACT tidak terkontrol berdasarkan derajat AHI dan risiko STOP-BANG. Pasien asma persisten sedang dominan menunjukkan nilai VEPI prediksi obstruksi sedang dan rasio VEPI/KVP obstruksi berdasarkan risiko STOP-BANG. Pasien asma persisten sedang dominan menunjukkan nilai VEPI prediksi obstruksi sedang dan rasio VEPI/KVP obstruksi berdasarkan derajat AHI.

Kesimpulan: Pasien asma persisten sedang memiliki skor STOP-BANG risiko sedang dan OSA derajat ringan dengan kadar FeNO 25-50 ppb, skor ACT tidak terkontrol, nilai VEPI prediksi obstruksi sedang dan rasio VEPI/KVP obstruksi.

.....**Introductions:** Asthma is a heterogeneous disease manifested by airway inflammation and wheezing, dyspnea, breathlessness and cough which are varied in intensity and time accompanied with variably restricted expiratory airflow. Obstructive sleep apnea (OSA) is manifested by repeated airway collapse or

decreased airflow despite breathing causing the impaired gas exchange intermittently and sleep disorder.

Some previous studies have correlated between asthma and OSA led by the severity of asthma.

Aims: To reveal the difference of inflammation condition by assessing fractional-exhaled nitric oxide (FeNO) level among graded obstructive sleep apnea (OSA) of persistent asthmatic outpatients.

Methods: This study involved 13 persistent asthmatic patients from asthma policlinic who had been screened using asthma control test (ACT) as well as STOP-BANG questionnaire and spirometry assessment of forced expiratory volume in 1 second (FEV1) and forced vital capacity (FVC), then the elective polysomnography and fractional- exhaled nitric oxide (FeNO) measurement.

Results: The moderate persistent asthmatic patients were dominated by female aged 48.38 ± 12.494 years old.

There were 53.85% patients presented with obesity whose mean body mass index was 28.67 ± 7.385 kg/m².

The median ACT score was 17 (7-23) of whom 61.46% patients had uncontrolled ACT score. The mean of predicted FEV1 was $70.38 \pm 20.230\%$ of whom 61.54% patients showed moderate obstruction. The mean of FEV1/FVC ratio was $72.85 \pm 12.681\%$ of whom 53.85% patients showed obstruction of FEV1/FVC ratio.

The median STOP-BANG score was 4 (3-6) of whom 53.85% patients showed moderate risk. The mean of FeNO level was 29.62 ± 9.152 ppb of whom 76.92% patients had FeNO level ranging 25-50 ppb. The mean of apnea hypopnea index (AHI) was 11.39 ± 18.222 events/hour of whom 76.92% patients showed the mild grade of AHI. The moderate persistent asthmatic patients mostly showed FeNO level ranging 25-50 ppb whose uncontrolled ACT score based on both grade of AHI and risk of STOP- BANG. The moderate persistent asthmatic patients showed moderate obstruction of predicted FEV based on risk of STOP-BANG. The moderate persistent asthmatic patients mostly showed moderate obstruction of predicted FEV1 and obstruction of FEV1/FVC ratio based on grade of AHI.

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Conclusions: The moderate persistent asthmatic patients showed the moderate risk of STOP-BANG score and mild grade of AHI as well with FeNO 25-50 ppb, uncontrolled ACT, moderate obstruction of predicted FEV1 and obstructive FEV1/FVC ratio.