Gambaran uji fungsi paru pada pasien Diabetes Melitus tipe 1 usia 8-18 tahun = Pulmonary function test profile in type 1 Diabetes Mellitus patient aged 8-18 years old

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Abstrak

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Latar belakang : Hiperglikemia kronik pada pasien Diabetes melitus tipe 1 (DMT1) dihubungkan dengan kerusakan jangka panjang, gangguan fungsi dan kerusakan berbagai organ tubuh lain seperti mata, ginjal, saraf, jantung dan pembuluh kapiler. Salah satu gangguan fungsi organ yang sering diabaikan sebagai akibat hiperglikemia adalah faal paru. Uji fungsi paru dapat membedakan kelainan paru obstruktif, restriktif atau campuran antara obstruktif dn restriktif. Uji fungsi paru dengan spirometri tidak dapat dilakukan dengan baik pada anak dibawah usia 7 atau 8 tahun karena memerlukan koordinasi yang cukup sulit. Penelitian tentang dampak DMT1 terhadap paru di Indonesia belum ada sampai saat ini.

Tujuan : Mengetahui gambaran uji fungsi paru pada pasien DMT1 usia 8-18 tahun.

Metode : Penelitian potong lintang dilakukan di Poliklinik Endokrinologi dan Respirologi Rumah Sakit Cipto Mangunkusumo (RSCM), serta Laboratorium Prodia Salemba pada bulan Januari 2015. Wawancara orangtua dilakukan dan data kadar HbA1c dalam rentang satu tahun terakhir diambil dari rekam medis subjek atau berdasarkan hasil pemeriksaan sebelumnya. Uji fungsi paru dilakukan sebanyak tiga kali dan diambil salah satu hasil yang terbaik. Kemudian subjek menjalani pengambilan darah untuk pemeriksaan kadar HbA1c dengan metode cation-exchange high pressure liquod chromatography (HPLC) di Laboratorium Prodia.

Hasil : Tiga puluh lima subjek berpartisipasi dalam penelitian, terdiri dari 68,6% perempuan. Rerata usia 14 ± 2,7 tahun dan median durasi DM adalah 4 tahun (1,3-10,2 tahun). Rerata parameter FEV1 adalah 86,8 ± 14%, FVC 82,7 ± 12% dan V25 83,1 ± 26,2%. Median FEV1/FVC adalah 92,4 % (77,6-100) dan V50 91,5 % (41,1-204). Fungsi paru normal didapatkan pada 19 subjek (54,3%) dan fungsi paru terganggu sebanyak 16 subjek (45,7%), terdiri dari 10 subjek (28,6%) gangguan restriktif, 2 subjek (5,7%) gangguan obstruktif dan 4 subjek (11,4%) gangguan campuran. Rerata HbA1c dalam 1 tahun terakhir pada subjek dengan gangguan restriktif adalah 10,3%. Simpulan : Nilai parameter uji fungsi paru pasien DMT1 usia 8-18 tahun masih dalam batas normal. Gangguan fungsi paru didapatkan pada 16 subjek (45,7%) dengan gangguan restriksi terbanyak yaitu 10 subjek (28,6%).
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ABSTRACT
Background: Chronic hyperglycemia in patients with type 1 diabetes mellitus (T1DM) is associated with long term functional impairment and damage of several parts of the body, such as eyes, kidneys, nerves, heart, and capillary blood vessels. Among all systems, disorder of pulmonary function due to hyperglycemia is often neglected by physicians. Pulmonary function test could determine whether the lung impairment is

obstructive, restrictive, or mixed. Pulmonary function test using spirometry could not be applied to children below 7 or 8 years old because they are not capable to do the test. Until now, research about the effect of T1DM to pulmonary function has never been done in Indonesia.

Objective: To obtain pulmonary function test profile in type 1 diabetes mellitus patients aged 8 to 18 years old.

Methods: This cross sectional study took place at Endocrinology and Respirology Outpatient Department of Cipto Mangunkusumo Hospital (RSCM) and Prodia Laboratory Service in Salemba in January 2015. Parents of subjects were interviewed for history disease. HbA1c level of recent year was collected from medical records or from previous test results. Pulmonary function test were conducted three times to each subjects and among those three results, the best was chosen as data. Blood samples were collected for HbA1c level measurement. The HbA1c level was measured by cation-exchange high pressure liquod chromatography (HPLC) method in Prodia Laboratory.

Results: Thirty five subjects participated in the research, 68.6% of them were female. The average age was 14 ± 2.7 years and the median duration of diabetes melitus was 4 years (1.3-10.2 years). FEV1, FVC, and V25 average was 86.8 ± 14%, 82.7 ± 12%, and 83.1 ± 26.2%, respectively. The median of FEV1/FVC and V50 was 92.4 % (77.6-100) and 91.5% (41.1-204) respectively. Nineteen subjects (54.3%) had normal pulmonary function and among 16 (45.7%) abnormal subjects, 10 (28.6%) had restrictive disorder, 2 (5.7%) had obstructive disorder, and 4 (11.4%) had mixed disorder. Average of HbA1c level of restrictive group was 10.3%.

Conclusions: Pulmonary function test parameter profile in type 1 diabetes mellitus patients aged 8 to 18 years old lies in normal range. Pulmonary function disorder was found in 16 subjects (45.7%). Among those 16 subjects, 10 (28.6%) had restriction disorder.;Background: Chronic hyperglycemia in patients with type 1 diabetes mellitus (T1DM) is associated with long term functional impairment and damage of several parts of the body, such as eyes, kidneys, nerves, heart, and capillary blood vessels. Among all systems, disorder of pulmonary function due to hyperglycemia is often neglected by physicians. Pulmonary function test could determine whether the lung impairment is obstructive, restrictive, or mixed. Pulmonary function test using spirometry could not be applied to children below 7 or 8 years old because they are not capable to do the test. Until now, research about the effect of T1DM to pulmonary function has never been done in Indonesia.

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