

Pengaruh penggunaan filter udara Anion-Kation seimbang (Plasmacluster Air Purifier) terhadap gejala klinis, Faal Paru dan inflamasi saluran napas pasien Asma Alergi = The effects of balanced Anion-Cation Air filter (Plasmacluster Air Purifier) usage on clinical symptoms airway inflammation Asthma control and lung function test of allergic Asthma patients / Ina Ariani Kirana Masna

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Abstrak

ABSTRAK

Pendahuluan: Faktor lingkungan seperti alergen dan polusi udara dapat memicu ataupun memperberat gejala asma akut serta menyebabkan persitens gejala asma terutama asma alergi. Telah banyak usaha dilakukan untuk mengurangi kadar alergen dalam udara. Salah satu caranya adalah dengan mempertahankan keseimbangan anion-kation sehingga terjadi denaturasi protein tungau debu rumah yang merupakan alergen utama. Kondisi keseimbangan anion-kation dalam udara ini serupa dengan kondisi alamiah hutan. Lingkungan yang serupa dapat dicapai menggunakan filter udara dengan ioniser sehingga tercapai keseimbangan anion-kation dalam udara. Apakah kondisi ini akan mempengaruhi kondisi inflamasi saluran napas dan fungsi paru pasien asma alergi belum pernah dibuktikan sebelumnya.

Metode penelitian: Penelitian ini dilakukan dengan uji klinis silang (cross-over), terbuka, pada pasien-pasien asma alergi. Data subjek diambil secara mandiri oleh pasien dan pemeriksaan berkala di Poli Asma. PPOK RS Persahabatan sejak Desember 2011 sampai September 2012. Pemeriksaan FeNO menggunakan NIOX mino, uji fungsi paru (spirometri), serta penilaian ACT dilakukan setiap bulan di RS Persahabatan.

Hasil Penelitian: Terdapat 36 pasien yang berhasil mengikuti penelitian sampai selesai, selebihnya mengundurkan diri. Terdapat enam subjek laki-laki dan 30 perempuan, rerata usia 42,72 tahun (18-63). Klasifikasi terbanyak adalah asma persisten ringan (19) diikuti dengan asma persisten sedang dan berat (10 dan 7). Perbandingan selisih nilai ACT akhir dengan nilai awal antara kelompok kontrol dengan perlakuan berbeda bermakna secara statistik ($p=0,008$) maupun secara klinis (rerata kenaikan 3,31 poin). Tidak didapatkan perbedaan yang bermakna secara statistik dalam nilai FeNO dan uji fungsi paru antara kedua kelompok pengamatan.

Kesimpulan: Pada penelitian ini didapatkan peningkatan nilai asthma control test setelah penggunaan filter udara dengan ioniser namun tidak didapatkan perbedaan inflamasi saluran napas dan nilai faal paru. Penggunaan filter udara anion-kation seimbang dapat direkomendasikan pada pasien asma alergi.

ABSTRACT

Introduction: Many attempts have been tried to reduce concentration of allergens which may precipitate acute asthma or cause persistence of symptoms especially in allergic asthma patients. One of the techniques used is air filter and ionizer which creates a balance anion-cation ambiance. Studies have showed that its use

can reduce airborne allergen concentration. Indoor ionised air has been proven to cause protein denaturation of house dust mite allergen, one of the most prominent indoor allergen. Ionised air has been proved to cause protein denaturation of mite allergens. This condition is similar to the natural condition existing in uncontaminated natural forests. This condition may be achieved by using a commercially available air purifier and ionizer. Whether this condition affects airway inflammation and lung function test in allergic asthma patients is yet to be proven.

Methods: This is a cross-over, unblinded, clinical trial, conducted in allergic asthma patients. Serial spirometry and FeNO measurements are performed monthly. Subjects are also asked to fill ACT for assessment of asthma control. Subjects is observed for two months without using air filter in their bedrooms and two months using air filter in their bedrooms with a two weeks interval in between observation.

Results: There were 50 patients enrolled in the beginning of this study but 14 dropped out while 36 completed the study. There were six male subjects and 30 female, averaging 42,72 (min 18, max 63). Most patients were mild persistent (n=30), followed by moderate and severe persistent asthma (10 and 7, respectively). The difference between baseline and end of two months observation in control and treatment group was statistically and clinically significant (paired t-test, p=0,008, 3 points ACT increase). Although there was a trend of decreased FeNO and increased FEV1/predicted ratio, time series and multivariate analysis in both was not statistically significant.

Conclusion: There was an increase of ACT score after air filter with ionizer usage but the change in FeNO and lung function test was not statistically significant. Air purifier can be recommended in allergic asthma patients to increase asthma control.