Aktivitas dan konsentrasi alfa-1 antitripsin dan sistatin C pada serum pasien asma alergi tungau = Activities and levels of alpha-1 antitrypsin and cystatin c in the serum of house dust mite allergic asthma patients

Mailani Dwi Hidayati, author

Abstrak

Tungau debu rumah (TDR) adalah salah satu sumber alergen yang paling umum. Sensitisasinya dapat menyebabkan asma. Alergen TDR kelompok 1 adalah alergen kuat anggota keluarga protease sistein yang mampu mengaktifkan alergen lain: kelompok 3, 6, dan 9 yang memiliki aktivitas protease serin. Aktivitas proteolitik terlibat dalam etiologi asma melalui meningkatkan permeabilitas sel epitel saluran napas yang memungkinkan alergen tersebut bersama alergen lain melewati sel epitel dengan memotong protein antar sel. Tubuh manusia memiliki inhibitor protease seperti alpha-1 antitripsin (AAT) merupakan antiprotease serin dan sistatin C merupakan antiprotease sistein. AAT diketahui juga merupakan protein fase aktif positif yang terlibat dalam mekanisme resolusi inflamasi. Sistatin C secara signifikan berhubungan dengan beberapa marker inflamasi seperti protein C-reaktif, IL-6, dan TNF-. Penelitian kami bertujuan mengetahui keadaan AAT dan sistatin C serum pasien asma TDR. Sebuah studi potong lintang dari 10 pasien asma TDR dan 10 subjek sehat dilakukan. Aktivitas penghambatan AAT dan sistatin C serum diukur dengan uji enzimatik. Konsentrasi AAT dan sistatin C serum diukur dengan metode ELISA. Tidak ada perbedaan signifikan pada aktivitas penghambatan AAT serum (p=0,445, p>0,05), konsentrasi AAT (p=0,290, p>0,05), dan konsentrasi sistatin C (p=0,290, p>0,05). Aktivitas penghambatan sistatin C serum pada pasien asma secara signifikan lebih tinggi daripada subjek sehat (p=0,001, p<0,05). Tidak ada korelasi antara aktivitas penghambatan AAT dan konsentrasi AAT atau korelasi antara aktivitas penghambatan sistatin C dan konsentrasi sistatin C yang diamati. Aktivitas sistatin C pada asma TDR signifikan lebih tinggi daripada subjek sehat. Sedangkan, aktivitas AAT, konsentrasi AAT, dan sistatin C pada pasien asma TDR tinggi tidak signifikan daripada subjek sehat.

.....House dust mite (HDM) is one of the most common sources of allergen. Its sensitization can lead to asthma. The group 1 mite allergens are potent allergens belonging to the papain-like cysteine protease family. Moreover, the group 1 mite allergens were able to activate others like groups 3, group 6, and group 9 that have serine protease activity. The proteolytic activity involves the etiology of asthma by increasing the permeability of the airway epithelial cell and allowing themselves and other allergens to pass through the epithelial cells by cleaving the cell surface molecules. The human body has natural inhibitor protease like alpha-1 antitrypsin (AAT) which has anti-serine protease and cystatin C which has anti-cysteine protease. AAT is known as an acute phase protein that is involved in the inflammation resolution mechanism. Cystatin C was significantly correlated with several inflammatory markers such as C-reactive protein, IL-6, and TNF-. Our study aimed to investigate the behavior of serum alpha-1 antitrypsin and cystatin C in patients with house dust mite asthma. A cross-sectional study of 10 patients with HDM allergic asthma and 10 healthy subjects were carried out. Serum AAT and cystatin C inhibitory activity were measured with enzymatic assays. While serum AAT and cystatin C concentration were determined by ELISA method. No significant differences in serum AAT inhibitory activity (p=0.445, p>0.05), serum AAT concentration (p=0.290, p>0.05), and cystatin C concentration (p=0.290, p>0.05). Serum cystatin C inhibitory activity in

asthmatic patients was significantly higher than healthy subject ($p=0.001$, $p<0.05$). Neither correlation between the AAT inhibitory activity and the AAT concentration or correlation between cystatin C inhibitory activity and cystatin C concentration was observed. In conclusion, the activity of cystatin C in dust mite asthma is significantly higher than in healthy subjects. Whereas the activity of AAT, concentration of AAT, and cystatin C in dust mite asthma patients are insignificantly higher than in healthy subjects.