INTISARI

Pengaruh Penghentian Paparan Asap Rokok dan Pemberian Rosuvastatin pada Tikus dengan Penyakit Paru Obstruktif Kronis (PPOK) Kajian terhadap kadar Malondialdehid (MDA) Serum dan Desmosin Serum

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Latar Belakang: Penyakit paru obstruktif kronis merupakan salah satu penyebab utama kecacatan dan kematian di dunia. Hingga saat ini PPOK belum dapat disembuhkan. Patogenesis utama PPOK adalah stress oksidatif. Obat golongan statin diketahui memiliki efek antioksidan dan terbukti menurunkan angka mortalitas pada PPOK.

Tujuan Penelitian: Mengetahui efek penghentian paparan asap rokok dan pemberian rosuvastatin terhadap kadar MDA dan desmosin tikus PPOK, serta mengetahui hubungan kadar MDA dengan desmosin serum.

Metode:dua puluh lima ekor tikus Sprague-Dawley jantan usia 10 minggu dibagi menjadi kelompok kontrol (n=5) dan perlakuan (n=20). Kelompok perlakuan mendapat paparan asap rokok selama 70 hari. Setelah paparan asap rokok dihentikan, kelompok perlakuan dibagi menjadi 4: Sham, R1, R2 dan R3. Secara secara berturut-turut, kelompok tersebut mendapat terapi NaCl o,9%, rosuvastatin 2,5; 5 dan 10 mg/kgBB/hari. Kadar MDA serum pre dan post-terapi diperiksa dengan TBARS, sedangkan kadar desmosin serum diperiksa menggunakan ELISA.

Hasil Penelitian: Kadar MDA dan desmosin pre-terapi tikus PPOK lebih tinggi bermakna ($p<0,05$) dibanding kontrol. Kadar MDA post-terapi seluruh kelompok terapi menurun bermakna ($p<0,05$). Kadar desmosin serum post-terapi meningkat bermakna ($p<0,05$) pada kelompok Sham dan R1, dan tidak bermakna ($p>0,05$) pada kelompok R2 dan R3. Terdapat korelasi positif bermakna antara kadar MDA dan desmosin serum pre-terapi, namun tidak pada kadar post-terapi.

Kesimpulan: Hentian asap rokok dapat menurunkan stress oksidatif, namun pengaruh rosuvastatin belum dapat dibuktikan. Rosuvastatain 5 atau 10mg/kgBB/hari mampu menekan peningkatan kadar desmosin serum setelah penghentian paparan asap rokok. Korelasi positif antara kadar MDA dan desmosin pre-terapi menunjukkan bahwa destruksi elastin dipengaruhi oleh stress oksidatif. Tidak adanya korelasi antara kadar MDA dan desmosin serum post-terapi dimungkinkan karena perbedaan tingkat inflamasi pada setiap kelompok.

Kata kunci: PPOK, malondialdehid, MDA, desmosin, berhenti merokok

ABSTRACT

EFFECTS OF SMOKE CESSATION AND ROSUVASTATIN THERAPY ON RATS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)
Studies on Serum Malondialdehyde (MDA) and Serum Desmosine Levels

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Background: Chronic obstructive pulmonary disease is an incurrable dissease which could lead to disability and death. The main pathogenesis of COPD is oxidative stress. Statins are known to have antioxidant effects and proved to reduce mortality in COPD.

Aims: To understand the effects of smoke cessation and rosuvastatin on MDA and desmosine level in COPD rats, as well as the correlation between MDA and desmosine level.

Methods: Twenty-five (25) male Sprague-Dawley rats aged 10 weeks were divided into two groups: control (n=5) and intervention (n=20). The Intervention group was exposed with cigarette smoke for 70 daysand then divided into four groups: Sham, R1, R2 and R3. Respectively, they received NaCl 0,9 %, rosuvastatin 2.5; 5; and 10 mg/kgBW/day. Pre and post-treatment serum MDA levels were measured using TBARS and serum desmosine level was measured using ELISA.

Results: Pre-treatment MDA and desmosine level of COPD rats was significantly higher ($p<0.05$) compared to control. Post-treatment MDA level decreased significantly ($p<0.05$) in all treatment group. The serum level of post-treatment desmosine was found to be increased significantly ($p<0.05$) in the Sham and R1 group but not in the R2 and R3 group. We found significant positive correlation between pre-treatment MDA and desmosine levels but not in the post-treatment.

Conclusion: Smoke cessation could reduce oxidative stress level but antioxidant effect of rosuvastatin could not be proved. Rosuvastatin 5 or 10 mg/kgBW/day could attenuated increases of desmosine level after smoke cessation. Positive correlation between pre-treatment serum MDA and desmosine levels showed that destruction of elastin is affected by oxidative stress. No correlation between post-treatment levels may caused by inflammation levels difference between group.

Keywords : COPD, malondialdehyde, MDA, desmosine, smoking cessation