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Correlation between F2-Isoprostane with stromal cell-derived factor-1 (SDF-1) and endothelial progenitor cell in nonhypertensive and hypertensive patients

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Abstrak

Tujuan Jumlah dan fungsi sel progenitor endotel menurun pada pasien dengan risiko penyakit kardiovaskular. Di sisi lain, pada hipertensi terdapat peningkatan angiotensin II yang dapat meningkatkan marker stress oksidatif sistemik yaitu F2-Isoprostan. Penelitian ini bertujuan mengetahui hubungan F2-Isoprostan dengan Stromal Cell-Derived Factor-1 (SDF-1) dan CD34 viable pada subjek nonhipertensi dan hipertensi. Metode Penelitian dilakukan pada 54 subjek nonhipertensi dan 64 subjek hipertensi yang datang ke laboratorium klinik Prodia Jakarta. F2-Isoprostane (marker stres oksidatif) dan SDF-1 (faktor pertumbuhan sel stroma) diukur dengan metoda ELISA. CD34 viable (marker sel progenitor endotel) diukur dengan metoda fl ow cytometri. Hasil Konsentrasi F2-Isoprostan lebih tinggi pada subjek hipertensi dibandingkan subjek nonhipertensi, namun secara statistic tidak signifi kan (m + SD: 0,13 ± 0,20 vs 0,10 ± 0,16; ρg/mL; p = 0,091). Konsentrasi SDF-1 lebih tinggi secara signifi kan pada subjek hipertensi dibandingkan dengan subjek nonhipertensi (2821,63 ± 281,94 vs 2623,04 ± 356,28 ρg/mL; P < 0,05). Konsentrasi CD34 viable lebih rendah secara signifi kan pada subjek hipertensi dibandingkan dengan subjek nonhipertensi (1,9 ± 0,9 /μL vs 2,7 ± 1,7 ; P < 0,05). F2-Isoprostan mempunyai korelasi negative dengan konsentrasi CD34 viable dalam sirkulasi (r = 0.022, p < 0.05) namun tidak mempunyai korelasi dengan SDF-1 (p > 0.05). Kesimpulan F2-Isoprostan dan SDF-1 lebih tinggi, sedangkan CD34 lebih rendah, pada subjek hipertensi dibanding nonhipertensi. Diduga F2-Isoprostan mengganggu tingkat CD34 viable, terbukti dari korelasi negative antara F2- isoprostan dan CD34.

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Abstract

Aim Circulating endothelial progenitor cells (EPCs) are reduced in number and function in patients at risk for cardiovascular diseases. On the other hand, hypertension is related with excess angiotensin II which would lead to oxidative stress. In this study,we investigated the correlation between F2-Isoprostane (as marker of oxidative stress) with Stromal Cell-Derived Factor-1 (SDF-1) and CD34 viable in non hypertension and hypertension subjects. Methods This was a cross sectional study conducted on 54 nonhypertension and 64 hypertension subjects visiting Prodia laboratory, Jakarta. F2-Isoprostane (as marker of oxidative stress) and SDF-1 (a strmal cell growth factor) were measured by ELISA method, and CD34 viable (marker of progenitor cell) was measured by fl ow cytometry. Results F2-Isoprostane concentration was higher in hypertensive subjects compared to nonhypertensive subjects, although statistically non signifi ant (mean + SD: 0.13 ± 0.120 vs 0.10 ± 0.16; ρg/mL; p = 0.091). SDF-1 concentration was signifi cantly higher in hypertensive subjects compare to nonhypertensive subjects (2821.63 ± 281.94 vs 2623.04 ± 356.28 ρg/mL; P < 0.05). CD34 viable level was signifi cantly lower in hypertensive subjects compare to nonhypertensive subjects (1.9 ± 0.9 /μL vs 2.7 ± 1.7; P < 0.05). F2-Isoprostane had negative correlation with CD34 viable in circulation (r = 0.022, p < 0.05) but no correlation with SDF-1 (p > 0.05). Conclusions F2-Isoprostane was higher, but CD34 was lower, in hypertensive subjects compared to

nonhypertensive. It seems that high F2-Isoprostane impaired the CD34 viable level as shown by negative correlation between F2- Isoprostane and CD34.