RINGKASAN

Untuk mengetahui pengaruh oksigenasi hiperbarik terhadap agregasi trombosit pada penderita diabetes mellitus tipe 2 (DMTTI) dilakukan suatu penelitian eksperimental laboratoris. Rancangan penelitian yang digunakan adalah randomized pretest-posttest group design dengan peserta coba yaitu penderita diabetes mellitus yang berobat di Poli Diabetes RSAL dr. Ramelan Surabaya.

Penelitian dilakukan di Lembaga Kesehatan Kelautan Surabaya, 32 penderita diabetes mellitus tipe 2 (DMTTI) wanita, usia 40 -75 tahun, diagnosis fisik normal, foto thoraks normal, THT normal, EKG normal, riwayat keluarga DM, BMI normal, , kadar glukosa darah tidak melebihi 400 mg/dl, kadar HbA1c normal, selama penelitian menghentikan OAD, OAT, vitamin C dan vitamin E. Sampel dibagi dalam 2 kelompok : kelompok perlakuan yang terpapar OHB 100% O_2 2,4 ATA 3x30 menit dengan interval 5 menit menghirup udara biasa sekali sehari selama 5 hari berturut-turut dan pengambilan data (TAT) sebelum paparan pada hari pertama, dan akhir hari ke-5, pada kelompok kontrol hanya diberikan 20% O_2 dengan tekanan 1 ATA 90 menit sekali sehari selama 5 hari berturut-turut dan pengambilan data (TAT) sebelum paparan pada hari pertama dan akhir hari ke-5. Sampel darah diperiksa agregasi trombosit menggunakan agregator kolagen dan agregometer.

Hasil yang diperoleh adalah terjadi penurunan parameter agregasi trombosit yaitu masa laten mengalami penurunan bermakna (p= 0,001) yaitu 25,75 $\pm$ 2,82 pada kelompok OHB dan peningkatan 31,25 $\pm$ 6,19 pada kelompok NONB. Kecepatan Agregasi juga mengalami penurunan bermakna (p = 0,022) 62,50 $\pm$ 3,44 pada kelompok OHB sedangkan pada kelompok NONB menurun 62,81 $\pm$ 6,52 . Demikian pula dengan Indeks Agregasi yang menurun bermakna (p < 0,001) 0,581 $\pm$ 0,083 pada kelompok OHB dan menurun 0,625 + 0,161 pada kelompok NONB. Persen Agregasi menurun bermakna (p= 0,013) setelah 5 hari dari 69,13 $\pm$ 6,03 pada kelompok OHB dan pada kelompok NONB menurun 70,44 $\pm$ 9,86.

Kesimpulan dari penelitian ini adalah penggunaan OHB 2,4 ATA 100% O_2, 3x30 menit dengan interval 5 menit menghirup udara biasa, sekali sehari, selama 5 hari berturut-turut bermanfaat bagi penderita NIDDM.

ABSTRACT

Recent surveys have shown that the prevalence of diabetes mellitus (DM), especially that of non insulin dependent diabetes mellitus (NIDDM) in Indonesia is on the increase. DM is known to cause blood rheology dysfunction affecting among others platelet, leucocyte and erythrocyte aggregation.

Hyperbaric oxygen (HO) has been used to treat diabetic gangrene, however, the effect of HO on rheology dysfunction caused by diabetes has not been adequately investigated. The aim of the present research was to investigate the effect of HO on platelet aggregation.

For this purpose an experimental study has been performed at the Naval Health Institute, Surabaya involving 32 female NIDDM patients recruited from the Diabetes Clinic, Surabaya Naval Hospital, aged 40-75 years, fulfilling the following characterictics : positive family history for diabetes, blood glucose level never exceeding 400 mg/dl, normal HbA1c level (4-5,9 %), body mass index (BMI) within normal limit (90-110% ideal BMI), normal findings on physical examination, chest X ray and ENT exammination. Patients participating in this study were asked not to take oral hypoglycaemic agents, oral anti-thrombotics, vitamin C and vitamin E during testing (5 days). Patients entered in this study were divided randomly into 2 groups i.e hyperbaric oxygen (HO) group (treatment group) and normal oxygen (NO) group (control group). Patients

participating in HO group (16 patients) were allowed to inhale pure (100%) oxygen, at a pressure of 2,4 ATA, 3x30 minutes with 5 minute interval each day for 5 days, while those in the NO group (16 patients) were inhaling 20% oxygen at normal (1 ATA) pressure for 90 minutes once a day also for 5 days. Blood samples were drawn on the 1st day before testing and on the 5th day after testing. Platelet aggregation was induced by adding collagen. The parameters measured were : latent period (LP), aggregation rate (AR), aggregation index (AI) and percent aggregation (PA). The obtained data were then statistically analysed.

The obtained results showed that HO treatment on NIDDM patients as described above could significantly decrease LP ($p = 0,001$) : HO = 25,75 $\pm$ 2,82, NO = 31,25 $\pm$ 6,19 ; AI ($p < 0,001$) : HO = 0,581 $\pm$ 0,083 , NO = 0,625 $\pm$ 0,161 ; AR ($p = 0,022$) : HO = 62,50 $\pm$ 3,44, NO = 62,81 $\pm$ 6,52 and PA ($p = 0,013$) : HO = 69,13 $\pm$ 6,03, NO = 70,44 $\pm$ 9,86.

It could thus be concluded that HO treatment to NIDDM patients will be of benefit.

Key words : Hyperbaric oxygen, NIDDM, platelet aggregation