

# **Influences of Hyperbaric Oxygen on Blood Pressure, Heart Rate and Blood Glucose Level in Patients with Diabetes Mellitus and Hypertension**

Noori S. Al-Waili, Glenn J. Butler, Jorge Beale, Mahdi S. Abdullah, Michael Finkelstein, Michael Merrow, Richard Rivera, Richard Petrillo, Zev Carrey, Bok Lee and Michael Allen

Life Support Technology and New Technology, Chronic Wound Care Wound Care and Hyperbaric Medicine Center, The Mount Vernon Hospital,

Mount Vernon, Sound Shore Health System, New York Medical College, New York, NY Received for publication December 19, 2005; accepted May 11, 2006 (ARCMED-D-05-00517).

## **ABSTRACT**

**Background.** We investigated the influences of hyperbaric oxygen (HBO<sub>2</sub>) on systolic blood pressure (SBP), diastolic blood pressure (DBP), heart rate (HR) and blood glucose level (BGL). **Methods.** Forty one patients with hypertension (HTN), diabetes mellitus (DM), HTN and DM and/or no HTN or DM underwent HBO<sub>2</sub> sessions (15-40 sessions for each patient). SBP, DBP, HR and BGL (for diabetics) were recorded before and after each session.

**Results.** HBO<sub>2</sub> caused significant elevation in SBP (11%) and DBP (12%) and a decrease in HR (18%) ( $p < 0.001$ ). Patients with DM and HTN showed higher elevation in SBP and DBP. HBO<sub>2</sub> lowered BGL by 23% ( $p < 0.001$ ). When basal BGL was in the range of 120-170 mg/dl, it dropped to  $< 100$  mg/dl in 31/60 treatment sessions (52%). When basal BGL was  $< 120$  mg/dl it dropped to  $< 70$  mg/dl in 8/34 sessions. There was a possibility of lowered BGL when basal BGL was  $< 170$  mg/dl and a marked reduction in BGL occurred when basal BGL was  $< 120$  mg/dl. HBO<sub>2</sub> caused a marked elevation in SBP and DBP when basal SBP was  $> 140$  mmHg. Critical elevation was obtained when SBP was  $> 160$  mmHg. The use of beta blockers caused significant elevation of blood pressure while reducing HR.

**Conclusions.** HBO<sub>2</sub> causes elevation of blood pressure and lowering of HR and BGL, which were augmented in the presence of HTN, DM, or beta blocker. The use of beta blockers for the management of HTN should be avoided during HBO<sub>2</sub> therapy. © 2006 IMSS.