Influences of hyperbaric oxygen on blood pressure, heart rate and blood glucose levels in patients with diabetes mellitus and hypertension.

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Abstract

BACKGROUND:
We investigated the influences of hyperbaric oxygen (HBO(2)) 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(2) sessions (15-40 sessions for each patient). SBP, DBP, HR and BGL (for diabetics) were recorded before and after each session.

RESULTS:
HBO(2) 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(2) 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(2) 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(2) 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(2) therapy.

PMID:

17045116

[PubMed - indexed for MEDLINE]

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