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Does hyperbaric oxygen affect blood sugar levels in diabetics? (Abstract only)

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Introduction: Diabetic patients constitute a major proportion of the patients treated in our hyperbaric unit. The effect of hyperbaric oxygen therapy (HBOT) on diabetic control is still unclear. A number of papers suggest an increase in insulin production or modification of metabolism favourable to the diabetic resulting in lower blood sugar. However, the numbers are small and all studies have involved insulin dependent (IDDM) diabetics exclusively.1-3 The effect in non-insulin dependent (NIDDM) diabetics is unknown. We have conducted an observational study over 12 months of blood sugar levels (BSL) before and after treatment in all diabetics presenting for HBOT.

Methods: Following ethical approval, 27 patients were consented, resulting in 237 episodes included for analysis. BSL was measured pre- and post-treatment for between three and 15 consecutive treatments. Glycosylated haemoglobin was measured from patients having more than 10 treatments. In addition, a daily diet plan, medication chart, and activity log were completed for each patient.

Results: The mean change in BSL over a single HBOT was a drop of 2.0 mmol.l-1 (SD +/- 2.5 mmol). Patients with IDDM accounted for 133 (56%) of treatment episodes. Of these, a reduction in BSL was recorded in 112 (84%) episodes. Seventy one (63%) of these reductions were > 2 mmol.l-1. Twenty one (19%) were > 4 mmol.l-1 with the majority requiring treatment. Eighty (77%) of the treatments in the NIDDM group were associated with a drop in BSL but none required intervention.

Conclusion: Our results show that on average diabetics having HBOT will drop their BSL by 2 mmol.l-1 during each treatment. There is however, considerable variability in this response. Non-insulin dependent diabetics appear to be more predictable in their response than insulin dependent diabetics and are unlikely to drop their BSL sufficiently to require treatment. We recommend that all diabetics eat a meal within two hours of their HBOT if possible and have a BSL prior to treatment. Significant hypoglycaemia is likely to be avoided if patients with IDDM and a BSL < 8.0 mmol.l-1, and with NIDDM and a BSL < 6.0 mmol.l-1, are given oral glucose before treatment. Larger numbers of patients should be studied to confirm this recommendation.

References

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