Glycosylated hemoglobin and hyperbaric oxygen-related diabetic foot ulcer healing

ANDREW D. MOFFAT[1,2] • EUGENE R. WORTH[3] • LINDELL K. WEAVER[1,2,4]

[1]*Division of Hyperbaric Medicine, Intermountain Medical Center, Murray, Utah and Intermountain LDS Hospital, Salt Lake City, Utah*
[2]*Department of Anesthesiology, Center for Hyperbaric Medicine and Environmental Physiology, Duke University Medical Center, Durham, North Carolina*
[3]*Hyperbaric Medicine, Dixie Regional Medical Center, St. George, Utah*
[4]*Department of Medicine, University of Utah, Salt Lake City, Utah*

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BACKGROUND

Medicaid and some Medicare fiscal intermediaries are denying HBO_2 diabetic foot ulcer (DFU) patients if their glycosylated hemoglobin (HbA1c) is greater than 7%. This presentation will review and abstract the literature as it relates to DFU and wound healing.

METHODS

We performed a PubMed search for: "diabetic foot ulcer" and "glycosylated hemoglobin." We filtered the results to include clinical trials. In addition, we also looked for papers whose purpose was to associate HbA1c with wound healing.

RESULTS

We scrutinized 16 peer-reviewed clinical trials found in the PubMed database. Thirteen were randomized controlled trials (RCT), 2 retrospective reviews, and 1 pooled analysis of 5 clinical trials. More than 2,000 patients are represented. The average HbA1c from the intervention side of the studies was 8.6% (7.5-11.3%, median of 8.2) and the control/sham side was 8.8% (8.0-10.9%, median of 8.4).

Seven studies made an attempt to associate HbA1c and wound healing. One retrospective cohort and 1 chart review series concluded that higher HbA1c levels were associated with a slower healing rate. However, 4 randomized controlled trials and 1 pooled analysis concluded that HbA1c was not a factor in wound healing through regression analysis. One retrospective review showed that a higher HbA1c in patients receiving HBO_2 led to better wound outcomes. No RCT data shows HbA1c directly influences DFU healing. One RCT posits that healing time is predominantly dependent on etiological causes of DFU.

CONCLUSIONS

While we try to optimize blood glucose control, there are many other factors that complicate DFU healing. We conclude that the practice of denying adjunctive HBO_2 with HbA1c >7% for DFU has no scientific support.