Hyperbaric Oxygen Therapy Mediates Increased Nitric Oxide Production Associated With Wound Healing: A Preliminary Study.

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OBJECTIVE:: The objective of this preliminary study was to document general somatic and wound nitric oxide (NO) levels during and after hyperbaric oxygen therapy (HBOT). DESIGN:: The study evaluated 6 chronic wound patients that responded favorably to HBOT treatment (20 treatments; 2.0 atmosphere absolute [ATA] x 90 minutes). Successful HBOT was associated with increased wound granulation tissue formation and significantly improved wound closure. Wound fluid and fasting plasma samples were obtained for measurement of nitrate and nitrite (NOx), the stable oxidation products of NO; plasma L-arginine (L-Arg); and asymmetric dimethylarginine (ADMA). NOx measurements were obtained before treatment (baseline), after 10 and 20 treatments, and at 1 and 4 weeks after therapy. RESULTS:: Wound fluid NOx levels tended to increase during treatments, were significantly elevated at 1 and 4 weeks after therapy, and correlated with reductions in wound area. Plasma L-Arg and ADMA were unchanged during and after HBOT. CONCLUSION:: This preliminary study documents a significant increase in local wound NO levels (by NOx measurements) after successful HBOT and suggests that this mechanism may be an important factor in promoting enhanced wound healing and wound closure associated with this therapy.