Show Some Skin

The HSE Model and Hyperbaric Oxygen: A model of accelerated wound healing

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Introduction to Hyperbaric Oxygen Therapy

- History
  - Diving and radiation treatment 1930-1950

- Current indications for HBO
  - CO poisoning
  - Chronic wounds etc.

- HBO Centres
  - Wesley Private

- Research
Chronic Wounds & Hyperbaric Oxygen

Scientific Evidence
HBO-Driven Wound Healing in the Laboratory

- Human Skin Equivalent Model
  - Model of HBO-driven wound healing / epithelialization

- Pros and Cons
  - Control - when, adjuncts
  - Cell types
  - Chronic vs acute wound
HBO-Driven Wound Healing in the Laboratory (cont.)

- **Methods**
  - HSE models
  - Lab scale HBO chamber
  - 2.4 (and 1) ATA, O$_2$ (air), 90 minutes/ day, 5 days
  - Cell- and tissue-based healing parameters
Results

Air, 1 ATA

Oxygen, 2.4 ATA

H&E staining
90 min treatment

day 0 day 3 day 5

n = 3, 4 independent replicates

Kairuz et. al. Wound Rep Reg (2007) 15 266–274
Results

HBO enhances epidermal thickness

Kairuz et. al. Wound Rep Reg (2007) 15 266–274
Results

- Other cell- and tissue-marker results
  - Proliferation and differentiation

- Very relevant, very applicable model of HBO-driven healing

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Future Outlook

- Biological processes of HBO / O₂ tension
  - HBO-regulated proteins in the HSE model
  - Therapeutics
  - Diagnostics
  - Prognostics

http://genome.uiowa.edu/TM_prot/
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