

THE EVALUATION OF OXIDATIVE STRESS AND ANTIOXIDANT STATUS FOLLOWING REPEATED HYPERBARIC OXYGEN IN PATIENTS WITH DECOMPRESSION ILLNESS



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Background

- **Hyperbaric oxygen causes oxidative stress through the production of Reactive Oxygen Species (ROS).**
- **Some patients with Decompression Illness (DCI) need repeated HBO treatment, which leads to concerns about an accumulation of oxidative stress.**

Aim

To determine whether exposure to two sessions of U.S. Navy Treatment Table 6 increases oxidative stress and decreases antioxidant capability

Methods

Subjects: Nine patients with DCI (M6, F3, 29 – 43, aver. 37 y/o)

HBO: U.S. Navy Treatment Table 6 X 2 at an interval of 3 days

Indexes in serum:

Oxidative stress

Reactive Oxygen Metabolites (ROM)

→the concentration of hydroperoxide

Antioxidant capability

Biological Antioxidant Potential (BAP)

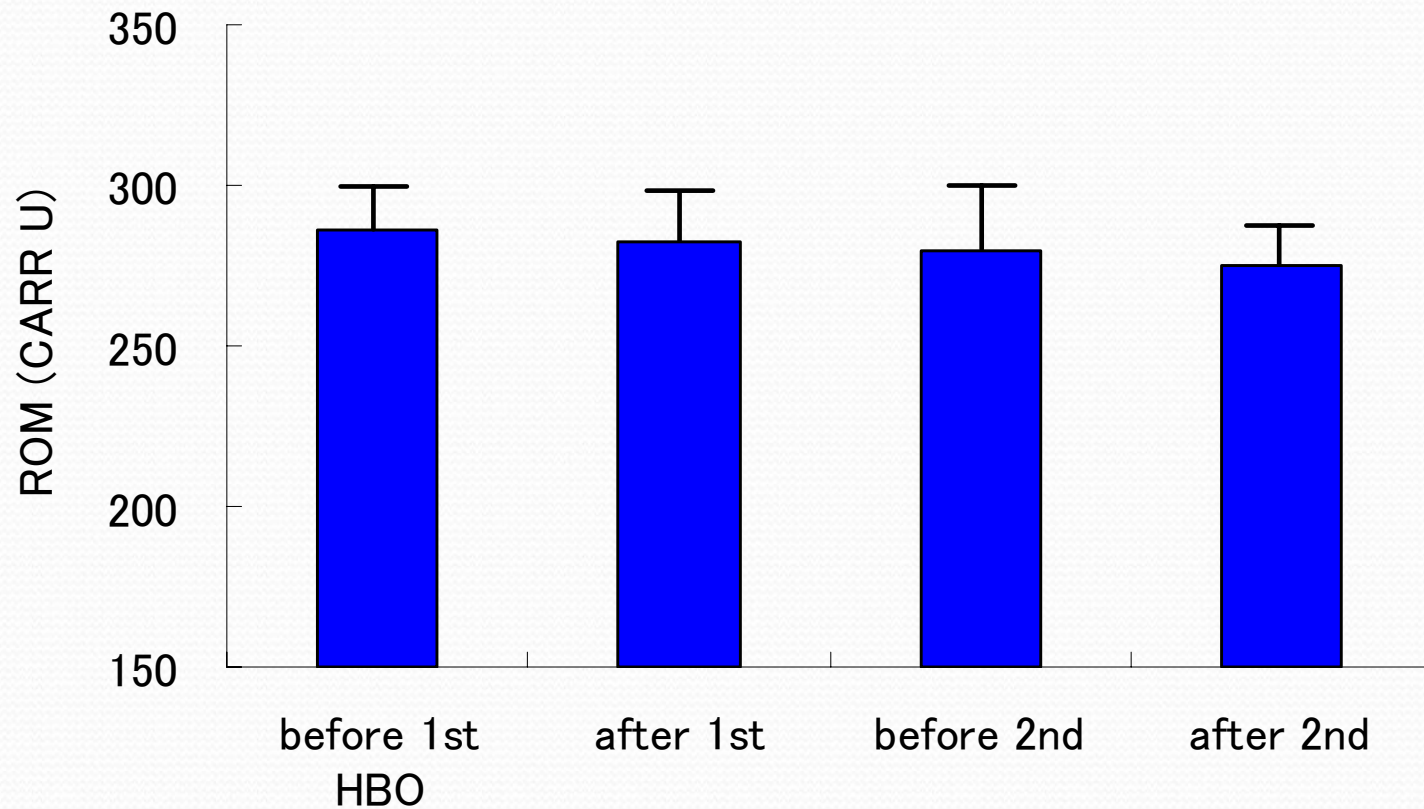
→the ferric reducing ability

Uric Acid (UA)

→has antioxidant capability

Reactive Oxygen Metabolites (ROM)

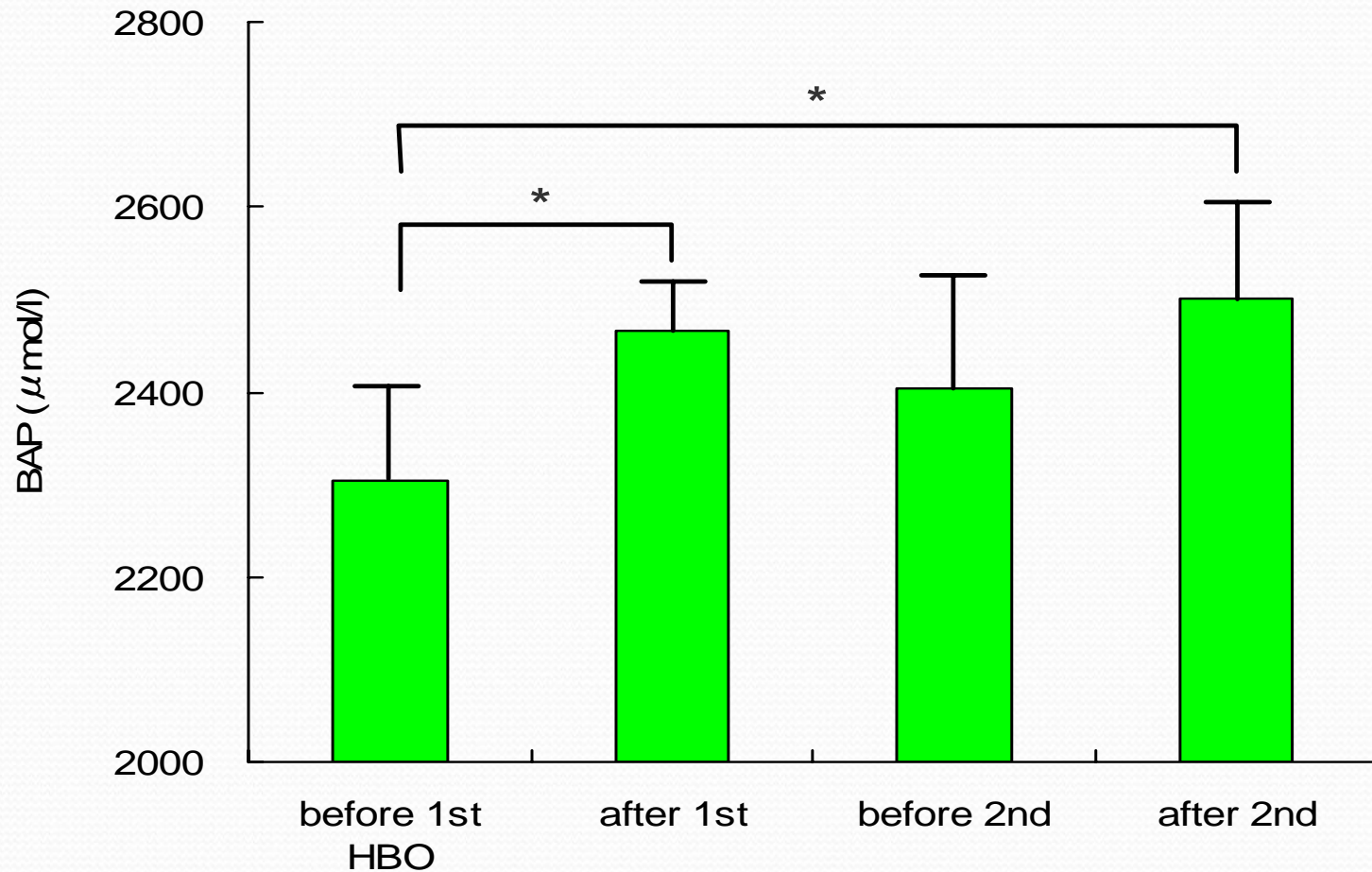
mean \pm SD., n=9



Biological Antioxidant Potential (BAP)

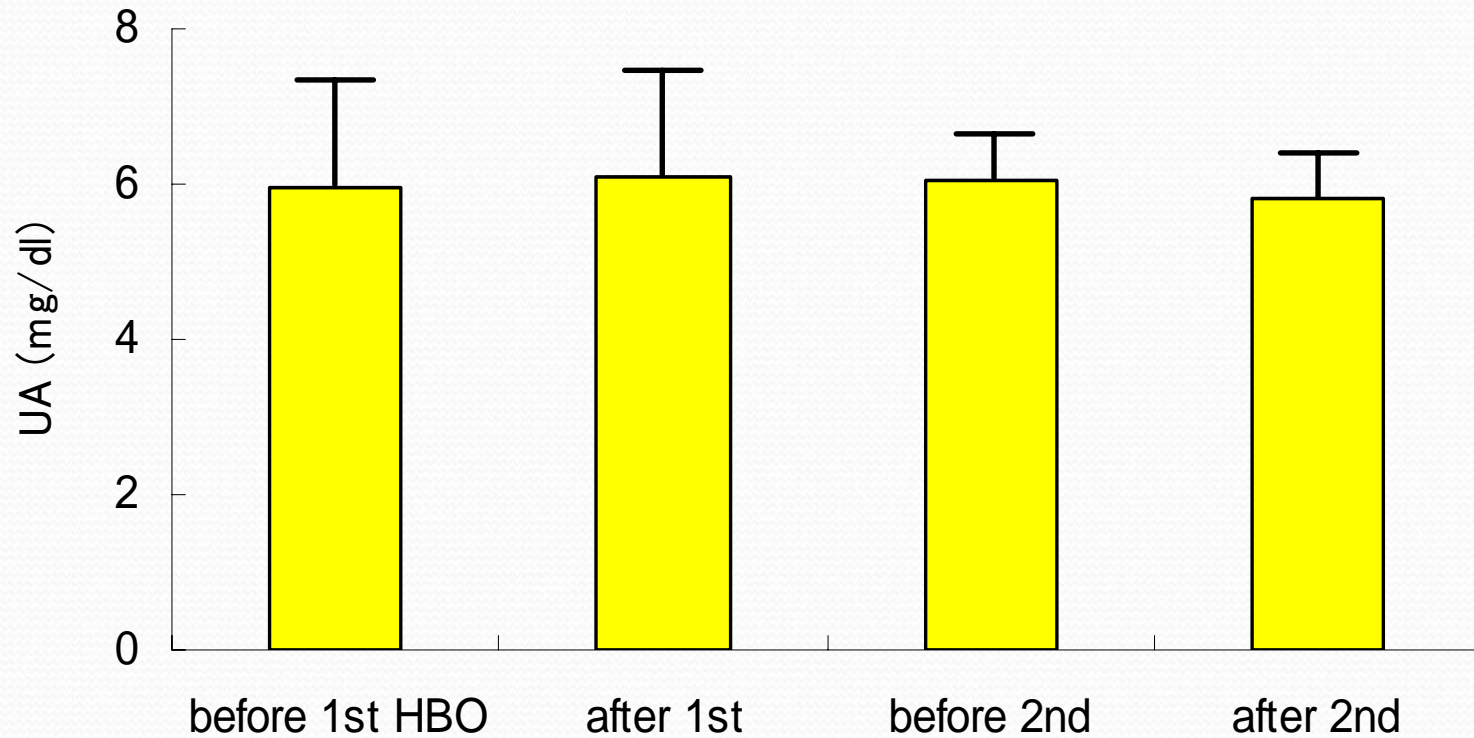
mean \pm SD., n=9, ANOVA followed by Dunnett's test

* $P < 0.05$ vs. before the 1st HBO



Uric acid (UA)

mean \pm SD., n=9



Summary

[Oxidative stress]

- ROM did not change during 2 sessions of Treatment Table 6.

[Antioxidant status]

- BAP significantly increased after each HBO.
- Uric acid was not affected.

→ Up-regulated antioxidant capability may help explain why no accumulation of oxidative stress was found even after repeated HBO.

Conclusions

- **Exposure to two sessions of Treatment Table 6 did not cause oxidative stress in patients with DCI.**
- **Antioxidant capability was significantly increased after each HBO, which indicates that compensation for oxidative stress was induced by HBO.**