

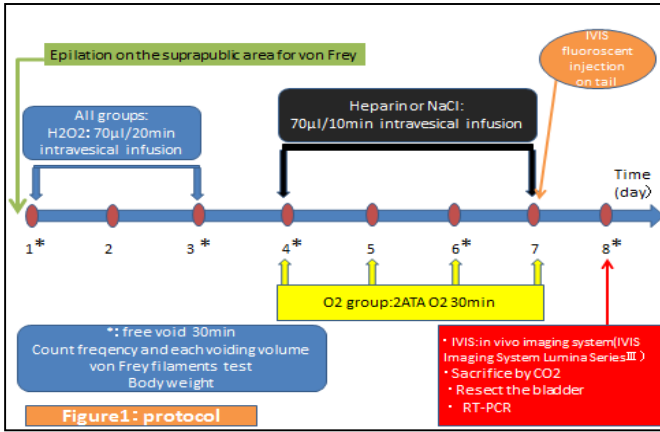
The efficacy of hyperbaric oxygen treatment for rodent interstitial cystitis/painful bladder syndrome model

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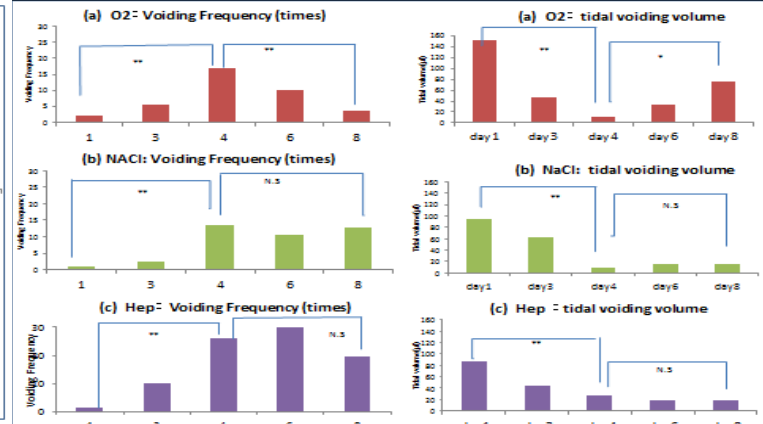
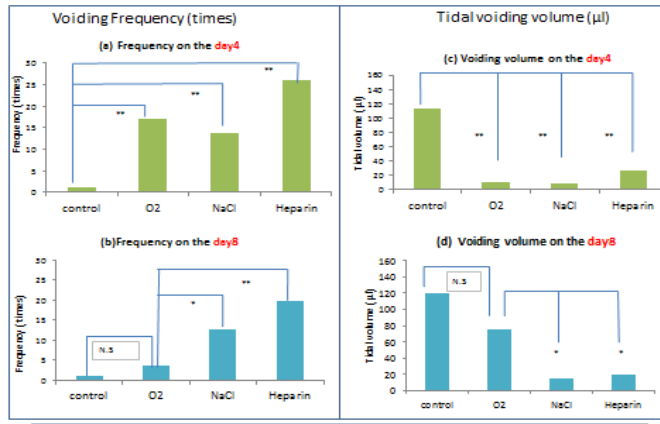
<Introduction>

A brand-new IC/PBS-like rodent model, which has the chronic cystitis caused by intravesical infusion of hydrogen peroxide (H_2O_2), was recently reported. This study's aim is to investigate whether HBO treatment is effective for the pathological condition using this IC/PBS-like rodent model.



6 weeks old ICR female mice

- Group 1 (Control): Control without both the instillation of H_2O_2 and followed treatments.
- Group 2 (HBO): After the intravesical instillation of H_2O_2 for 20 minutes (min) on the day 1 and 3, followed by the treatment with HBO (100% O_2 , 2 ATA, 30 min/day) through the day 4 to 7.
- Group 3 (NaCl): After the intravesical instillation of H_2O_2 for 20 min on the day 1 and 3, followed by the instillation of vehicle for 10 min on the day 4 and 7.
- Group 4 (Heparin): After the intravesical instillation of H_2O_2 for 20 min on the day 1 and 3, followed by the intravesical instillation of heparin for 10 minutes on the day 4 and 7
- On the day 1, 3, 4 and 6, we measured body weight, voiding frequency (free void in each gauge for 30 minutes), voiding volume and the individual bladder pain threshold (on the suprapubic region) using von-Frey test. On the day 7, we injected intravenously the fluorescent agent taken specifically in inflammatory region and took the whole body images using IVIS (Lumina Series III) on the day 8. We sacrificed these mice and resected each bladder for histopathological examination and RT-PCR. Subsequently, we performed immunohistochemical stain and measured the mRNA expression of several biomarkers (e.g., IL-6, eNos) associated with IC/PBS using the some specific TaqMan probes.



Histopathological (H.E)

Histopathological (Masson Trichrome)

Histopathological (eNos)

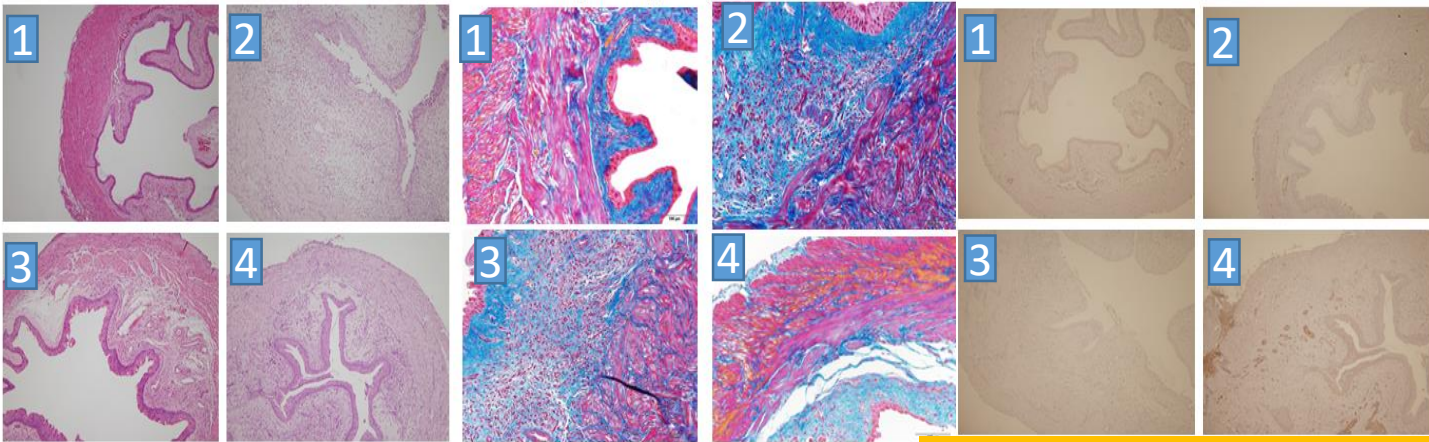
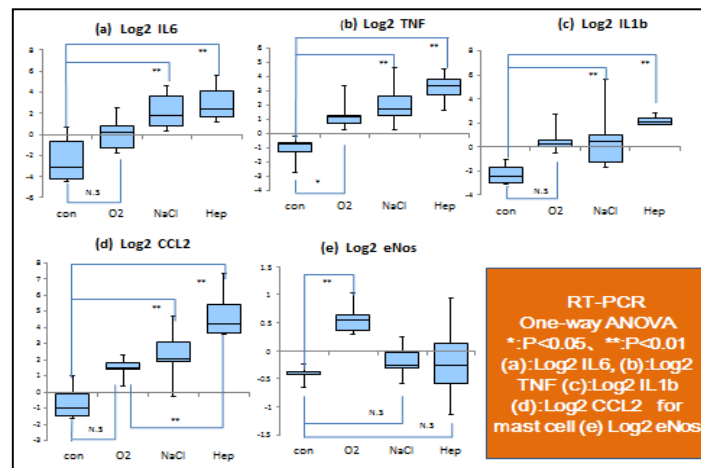
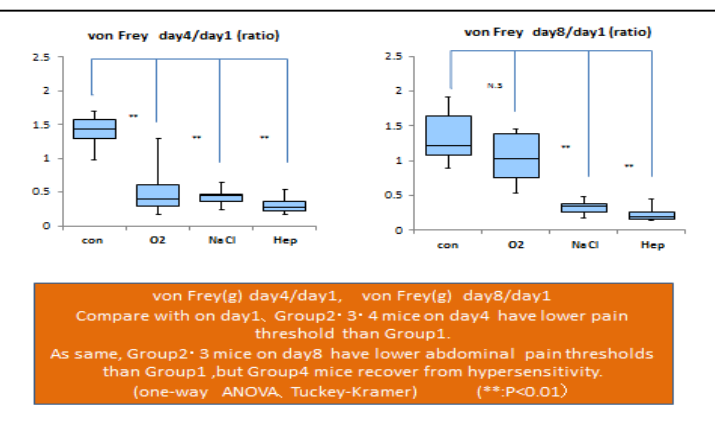


Figure 3 1:Control 2:NaCl 3:Heparin 4:HBO



RT-PCR
One-way ANOVA
*:P<0.05, **:P<0.01
(a):Log2 IL6, (b):Log2 TNF (c):Log2 IL1b (d):Log2 CCL2 for mast cell (e) Log2 eNos



von Frey(g) day4/day1, von Frey(g) day8/day1
Compare with on day1, Group2* 3* 4 mice on day4 have lower pain threshold than Group1.
As same, Group2* 3 mice on day8 have lower abdominal pain thresholds than Group1, but Group4 mice recover from hypersensitivity. (one-way ANOVA, Tuckey-Kramer) (**:P<0.01)

<Conclusion>

The treatment with HBO can induce the early recovery of bladder capacity and pain, concomitant with the simultaneous biological changes in the IC/PBS-mimic mouse bladder. The experimental data from this study will secure the possibility of improvement of IC/PBS patients' symptoms on the basis of these evidences.

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Disclosure of Conflict of Interest

Name of first author: Akinori Minami

I have no COI with regard to our presentation