

## ABSTRACT

### **HYPERBARIC OXYGEN THERAPY EFFECT ON CONTRAST SENSITIVITY AND MACULAR LIGHT SENSITIVITY IN DRY TYPE AGE RELATED MACULAR DEGENERATION PATIENTS**

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**Objective :** To compare the effectiveness of hyperbaric oxygen therapy on contrast sensitivity and macular light sensitivity improvement in stage 1, 2, and 3 of dry type age related macular degeneration (AMD) patients based on AREDS classification.

**Methods :** This clinical research was using quasi-experimental design. The subjects were eyes of ophthalmology outpatient clinic patients at RSUD Dr. Soetomo that had been diagnosed with stage 1, 2, or 3 of dry type AMD which met inclusion criteria. They were divided into two groups. The first group were given antioxidants and hyperbaric oxygen therapy (HBOT) with 100% oxygen under 2.4 ATA pressure for 3 x 30 minutes with 5 minutes resting phase each day for four days. The second group were control group and being given antioxidants only. The subjects then underwent some examinations which are contrast sensitivity using MARS contrast sensitivity chart and macular light sensitivity using Humphrey Field Analyzer-3 for three times, pre-therapy, day-1 and 14 post therapy.

**Result :** 26 eyes from 16 patients were enrolled into the study, one subject refused to continue and therefore drop out. 25 eyes were included in to analysis, divided into two groups, 14 subjects in first group and 11 subjects in second group. There is no significant difference between both groups from distribution of gender, age, diabetes, hypertension, and obesity status. Statistical analysis results show there are significant increase on contrast sensitivity in intervention group between one-day post-therapy with pre-therapy ( $p=0.003$ ), and between 14-days post-therapy with pre-therapy ( $p=0,015$ ). There is no significant difference found on contrast sensitivity on control group. For macula light sensitivity, there is no significant difference found in the intervention group. For the control group, there is significant increase on superotemporal area between one-day post-therapy and pra-therapy ( $p=0.004$ ), superonasal area between one-day post-therapy and pra-therapy ( $p=0.013$ ), inferonasal area between one-day post-therapy and pra-therapy ( $p=0.008$ ), and there is significant decrease on inferonasal area between 14-day post-therapy and one-day post-therapy ( $p=0.003$ ).

**Conclusion :** In this study 14 subjects with AMD underwent HBOT and achieved improvement in contrast sensitivity in cases considered low prognosis. There were minor complications but treatable. HBOT should be considered as a promising intervention for AMD management and further research are needed to find the optimal dosage.

**Keywords :** AMD, HBOT, Hyperbaric, Contrast sensitivity, Macular light sensitivity