一般演題 4 O4-07
Effects of hyperbaric oxygen treatment to aquaporin expression in salivary gland-in vivo study
高気圧酸素治療が唾液腺アクアポリン発現に与える影響の検証—In vivo study

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【Objectives】

Hyperbaric oxygen therapy (HBOT) has the potential to be a treatment for xerostomia, but the mechanisms involved are not well understood. This study is to investigate the therapeutic roles of HBOT in salivary gland, determining aquaporin-1 (AQP1) and aquaporin-5 (AQP5) were involved in the mechanisms of HBOT in salivary gland (SG) of rats.

【Materials and methods】

Twenty-four 8-week-old male Wistar rats were divided into four groups: the control-30min group, the HBOT-30min group, the control-60min group, and the HBOT-60min group. The treatments were performed five days a week for two weeks. The HBOT group received 100% oxygen at 2.5ATA, while the control group received no treatment. The protein expression levels of AQP1, AQP5, Hypoxia inducible factor-1α (HIF-1α) and vascular endothelial growth factor (VEGF) at SGs (submandibular and parotid gland) were measured using enzyme-linked immunosorbent assay. And localizations of proteins were analyzed using immunohistochemistry.

【Results】

The expressions of proteins related to saliva secretion (AQP1, AQP5 and VEGF) were significantly increased in the HBOT-60min group in parotid glands of rats, AQP1 and HIF-1α were significantly increased in the HBOT-60min group in submandibular glands of rats. AQP1, AQP5 and VEGF proteins were significantly expressed in the acinar and duct epithelial cells in HBOT-60min group in parotid glands.

【Discussion】

HBOT upregulated AQP1, AQP5, VEGF and HIF-1α expression, likely plays an important role in saliva secretion pathway. These results could serve as guidelines, and further studies are required to explore the underlying mechanisms.