



## **Pain-only decompression sickness affecting the orbicularis oculi**

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Hart BL, Dutka AJ, Flynn ET. Pain-only decompression sickness affecting the orbicularis oculi. *Undersea Biomed Res* 1986; 13(4):461-463. A case is reported of a diver who experienced the onset of pain in the left orbicularis oculi muscle approximately 20 min after surfacing from an experimental dive. A careful neurologic examination disclosed no abnormality. The response of the orbicularis oculi muscle to stimulation of the facial nerve and the blink reflex were both normal as recorded with a clinical neurophysiologic recording system (Nicolet CA 1000). The pain resolved quickly with recompression, supporting a diagnosis of pain-only decompression sickness in this small facial muscle.

decompression sickness  
blink reflex  
facial nerve

The most common manifestation of decompression sickness is pain in or around large joints and muscles. This report describes an unusual case of pain-only decompression sickness (DCS) involving the orbicularis oculi muscle.

### **CASE REPORT**

A 34-yr-old, experienced, male Navy diver made an experimental dive to 3.9 ATA for 60 min in the wetpot of a hyperbaric research chamber complex. The subject breathed a 65% N<sub>2</sub>:35% O<sub>2</sub> mixture and used the USN Mark I diver's mask. Descent was at 2.3 atmospheres/min and ascent at 1.8 atmospheres/min. The only stops were a 10-s hold at 1.9 ATA to change from air to the nitrox mix on descent and vice versa on ascent. The mask fit comfortably and the subject had no difficulty equalizing ears or sinuses during the dive. Moderate work was performed by pedaling an exercise sled in 70°F water during the dive. Work was interrupted intermittently by brief rest periods. The subject was well-rested and had taken no medications or alcohol for at least 24 h before the dive. He felt well upon surfacing from the dive. Approximately 20 min after surfacing, he noticed a sensation of tightness, "like a sore muscle."



involvement of the orbicularis oculi muscle. The location of the pain also raised suspicion about the lateral rectus muscle, although the absence of diplopia argued against significant involvement of this muscle. A careful neurologic examination disclosed no abnormality. The absence of damage to the facial nerve branch to the orbicularis oculi was substantiated by the normal distal latency and amplitude of the motor response evoked by electrical stimulation at the angle of the jaw. The normal function of the afferent trigeminal nerve, brainstem interconnections, and efferent facial nerve was assured by the normal latency of the R1 and R2 components of the blink reflex. The R1 component is recorded ipsilateral to the stimulus only and probably represents a monosynaptic reflex arc. The later R2 response is a polysynaptic reflex with latency and ease of recording influenced by damage to the brainstem or descending corticobulbar tracts (1).

Decompression sickness most commonly involves the musculoskeletal system in the region of large joints. Although bubble formation is strongly implicated, the exact nature of the injury and even the location of the injury are unclear. The present case offers an example of localized injury in a small muscle. Neurologic DCS, a possibility of strong concern with the reporting of facial symptoms, was excluded. The orbicularis oculi muscle is an extremely unusual location for DCS; we are unaware of any previous reports of such an occurrence. However, the appearance of pain in a muscle shortly after a dive and its prompt response to recompression are consistent with mild, pain-only DCS.

The opinions and assertions contained herein are those of the authors and are not to be construed as official or as reflecting the views of the U.S. Navy Department or the naval service at large.—*Manuscript received for publication December 1985; revision received April 1986.*

Hart BL, Dutka AJ, Flynn ET. Maladie de décompression avec douleur seulement affectant le muscle orbiculaire des paupières. *Undersea Biomed Res* 1986; 13(4):461-463.—Un cas est rapporté d'un plongeur qui éprouva un début de douleur dans le muscle orbiculaire de la paupière gauche environ 20 min après le retour à la surface d'une plongée expérimentale. Un examen neurologique attentif ne révéla aucune anomalie. La réponse du muscle orbiculaire de la paupière à la stimulation du nerf facial et le réflexe de clignement étaient tous les deux normaux, tel qu'indiqué par un système d'enregistrement neurologique clinique. La douleur disparut rapidement avec la décompression, supportant le diagnostic de maladie de décompression avec peine seulement dans ce petit muscle facial.

maladie de décompression  
réflexe de clignement  
nerf facial

#### REFERENCE

1. Kimura J, Powers JM, Van Allen M. Reflex response of the orbicularis oculi muscle to supraorbital nerve stimulation: Study in normal subjects and in peripheral facial paralysis. *Arch Neurol* 1969; 21:193.