

Swimmer's headache, or supraorbital neuralgia

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Associated with the fitness movement in the USA is an increased number of participants in water sports. Swimmers wear goggles to allow better vision underwater and to protect their eyes from irritation from chlorine or salt. Goggles come in many sizes and shapes; usually a swimmer finds a particular brand and model most effective and comfortable.

I recently saw a patient who complained of "painful hair." He had been swimming for 6 years and had recently developed pain and tenderness on the right side of his scalp. Palpating along the tender areas, I outlined the distribution of the right supraorbital nerve. Just prior to the development of the scalp pain, he had developed a leak in his goggles that allowed water to enter the orbital area, causing eye irritation. As he had done before, he tightened the goggle strap to stop the leak. He continued with the swim workout and subsequent workouts 3 to 4 times per week. After approximately 1 week, the scalp pain began.

A Medline search on this topic found 2 letters to the editor in the *New England Journal of Medicine* in 1983. The first related the experience of a neurologist who developed bitemporal headaches after 1 to 2 hours of swimming. The father of the neurologist, who was a sporting goods retailer, noted that some of his customers complained of headaches associated with the use of ill-fitting swim goggles. The headaches stopped after use of the swim goggles was discontinued and returned when the goggles were worn again. By using goggles that were made of a softer rubber compound and had a looser-fitting strap around the head, the neurologist was able to continue swimming without headaches (1).

The second letter to the editor, in response to the first, was from another neurologist who developed neuralgia in the distribution of the supraorbital nerve. The headaches and supraorbital-notch pain resolved 3 weeks after he abstained from wearing goggles (2). This neuralgia is similar to that experienced by my patient after he tightened the strap on his goggles. Swimmers with a supraorbital notch (<100% bony encasement of the nerve) rather than a supraorbital foramen have a greater risk of developing this problem due to the exposed portion of the nerve (3). The affected nerves in these cases of swimmer's headache are illustrated in the *Figure*.

Prevention is the best treatment; however, if this condition does occur, the following may help: careful placement of the goggles, use of a different type of goggle with softer rubber and/or a smaller area of seal around the eyes, and placement of the goggles in different locations to prevent repeated pressure trauma.

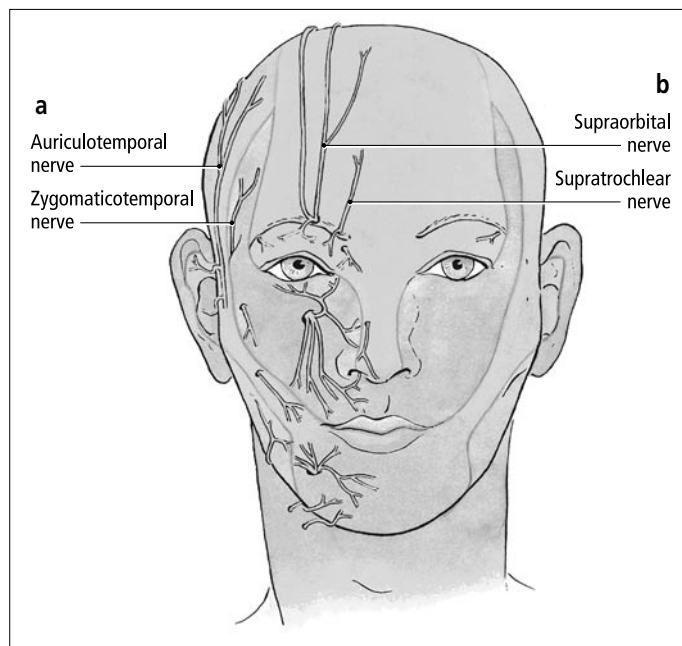


Figure. Nerves affected in the 3 described cases of swimmer's headache. (a) Nerves affected in letter 1. (b) Nerves affected in letter 2 and in the author's recent patient. LifeArt image copyright Lippincott Williams and Wilkins. All rights reserved.

A trial block with local anesthesia can confirm the diagnosis so that proper remedial steps can be taken.

Other conditions associated with swimming goggles are eyelid neuromas due to the edge of the goggles (4, 5) and periorbital leukoderma due to contact with the chemical compounds used in goggle manufacture (6). When goggles are worn too tightly, "purpura gogglorum," or periorbital purpura, can occur (7). Goggles can cause injury to the globe, including rupture (8), and this was the reason the use of goggles was banned by the Royal Life Saving Society during the conduct of its practical examination taken in the water and in initiative tests in competition (9). An excellent review of eye injuries in young athletes has been published in *Pediatric Annals* (10).

Those of us who see patients with head and neck problems need to be aware of supraorbital neuralgia and include this entity

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in our differential diagnosis. Various types of headache and pain occur in the craniofacial area. Swimmer's migraine is a sudden, severe headache occurring during swimming (11); it is a form of exertional headache that has an explosive onset with exercise, including sexual activity (12). Frontal sinus infection (13), trigeminal neuralgia (14), cluster headaches, migraines, and other pain syndromes (short-lasting unilateral neuralgiform headache attacks with conjunctival injection and tearing, or SUNCT [15]) occur. Perineural involvement of the periorbital sensory nerves by skin cancer also is a consideration in patients who have a skin cancer or a history of cutaneous malignancy (16).

Correct diagnosis of supraorbital neuralgia is critical in choosing therapy. A change in the type of goggles may be all that is necessary. For persistent or recurrent pain, acupuncture (17), injection of phenol/glycerol (18) or botulinum toxin (19), neurolysis (20), and root section (21) of the trigeminal nerve are methods that have been successfully employed to treat this condition.

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