

## Unilateral Periorbital Swelling With Nasal CPAP Therapy

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A 53-year-old white female was diagnosed with obstructive sleep apnea by polysomnogram. Her OSA was initially treated with nasal CPAP with good resolution of her symptoms. Several months after initiating her CPAP therapy she developed unilateral periorbital swelling. Swelling improved off CPAP therapy, but with recurrence of her daytime sleepiness. An extensive work-up was carried out including evaluation by both ophthalmology and ENT. Neither found any reason for the development of the periorbital swelling. Further history obtained from the patient prompted additional testing. A CT scan of the orbits and sinuses with reconstructed

view demonstrated a likely source of her periorbital swelling, a fracture in the superior aspect of the right orbit with sinus communication. Currently off nasal CPAP she has no further episodes of swelling, but has had return of her sleepiness symptoms. Alternative options for treatment of her OSA are being sought.

**Keywords:** Obstructive sleep apnea, CPAP therapy, complications

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Obstructive sleep apnea (OSA) is a common disorder, affecting 2% to 4% of the population.<sup>1</sup> Currently, nasal continuous positive airway pressure (CPAP) therapy is considered the treatment of choice for OSA. Complications are typically mild, and compliance is often the biggest issue. Compliance ranges from 60% to 80%.<sup>2-4</sup> We report a complication of CPAP use that has not been previously reported in the literature.

### REPORT OF CASE

The patient is a 53-year-old woman who underwent polysomnography for symptoms consistent with OSA. Prior to study, she had complained of daytime sleepiness that was interfering with her work-related activities. In May of 2004, polysomnography was done, which demonstrated an apnea-hypopnea index of 13 that did worsen during rapid eye movement sleep, with an apnea-hypopnea index of 55. Due to the severity of her daytime-sleepiness symptoms, it was recommended that she undergo CPAP titration for the treatment of her OSA. In July of 2004, CPAP was titrated to a pressure of 11 cm H<sub>2</sub>O pressure, which was found to be effective in eliminating her obstructive apneas. During her follow-up visit, she showed excellent compliance, with near complete resolution of her symptoms. She was able to complete work-related activities without sleepiness.

The patient developed right periorbital swelling in December of 2004, which was first evaluated by her primary care physi-

cian. After evaluation, it was felt that the swelling could be due to Bell's palsy. Her periorbital swelling persisted after a short course of oral steroids.

At a follow-up visit with her sleep specialist in February of 2005, she continued to have problems with swelling of her right eye. CPAP therapy was discontinued. Her symptoms of eye swelling improved, but her daytime sleepiness returned. It was felt that her CPAP usage may be linked to her swelling, and further evaluation was sought for possible etiologies. She had a previous history of chronic sinusitis with surgical intervention years prior. Consultation with an otorhinolaryngologist was sought to further explore this possible link. A computed tomography scan of the sinuses demonstrated a small retention cyst. The evaluating otorhinolaryngologist did not feel that this could be contributing to the swelling. Evaluation by ophthalmology was also sought. Upon completion of the ophthalmologic evaluation, it was determined that the patient had a mild case of conjunctivitis, but, like the otorhinolaryngologist, the ophthalmologist could not find the etiology of her periorbital swelling.

In April of 2005, nasal CPAP therapy was reintroduced. She had marked improvement in her daytime sleepiness but, once again, had a return of her periorbital swelling (see Figure 1). Still without a clear etiology of her swelling, further history was sought from the patient. Additional information provided by the patient included a history of a right-sided skull fracture she had sustained as the result of a motor vehicle accident in 1999. This additional information prompted repeated imaging, which included a computed tomography scan of the skull and sinuses with reconstructed images. These showed a fracture in the superior aspect of the right orbit with possible communication with the right frontal sinus. It was felt that this was the source of her periorbital swelling with her continued use of nasal CPAP. Nasal CPAP has been discontinued, with resolution of her periorbital swelling, but return of daytime sleepiness symptoms. Other treatment options for treatment of her OSA are being explored.

### Disclosure Statement

This was not an industry supported study. Drs. Ely and Khorfan have indicated no financial conflicts of interest.

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**Figure 1**—A photo depicted after several nights of CPAP therapy. Note right periorbital swelling that almost completely eliminates the ability to open her right eye. Photo reproduced with patient permission.

## DISCUSSION

CPAP therapy at this time is the gold standard for therapy of OSA, although it is not without its problems. Compliance issues and complications continue to plague CPAP use and the treatment of OSA. This patient had good compliance and excellent results with respect to her daytime sleepiness symptoms of OSA, but complications have limited the use of nasal CPAP in this patient. Alternatives such as oral appliances and surgical approaches will need to be further investigated.

There are many known complications of nasal CPAP, but a search of the medical literature has not found another case of unilateral, or bilateral, periorbital swelling that has been reported. It was felt that this patient's history of an automobile accident and skull fracture with communication to the sinuses led to this complication.

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