

Pseudotumor cerebri induced by topical application of steroid: a case report

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Abstract

A 19-year-old man visited the neurology clinic for evaluation of a headache and pulsating tinnitus that he had experienced for 2 months. A neurological examination was normal, except for bilateral disc swelling. His medical history was notable for recently diagnosed psoriasis for which he had been applying topical hydrocortisone 2.5% three to four times a day. Neuroimaging with a computed tomography scan and magnetic resonance imaging/magnetic resonance venography of the brain was normal, except for tortuosity of the optic nerves and dilatation of the optic nerve sheaths. Pseudotumor cerebri **syndrome** was suspected. Unfortunately, the patient refused a spinal tap to measure the cerebrospinal fluid opening pressure. Excessive application of topical steroid was believed to be the cause of the patient's pseudotumor cerebri **syndrome**. The patient's headache and disc swelling improved after treatment with **acetazolamide** and cessation of topical hydrocortisone. This is the first case report of a topical steroid associated with pseudotumor cerebri **syndrome**.

Keywords

Pseudotumor cerebri, headache, disc swelling, topical steroid, hydrocortisone, optic nerve

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Introduction

Overweight, female sex, obstructive sleep apnea, vitamin A, and tetracycline have been identified as risk factors for pseudotumor cerebri **syndrome** (PTCS).¹ Additionally, systemic steroid consumption and withdrawal

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are associated with **PTCS**.² Topical steroids are widely used, prescribed or over the counter, for various inflammatory skin diseases. To date, no cases of topical steroid use causing **PTCS** have been reported. In this report, we present a patient who developed **PTCS** after excessive application of a topical steroid.

Case presentation

A 19-year-old man visited the neurology clinic for evaluation of a headache and pulsating tinnitus that he had experienced for 2 months. He had been excessively using topical hydrocortisone 2.5% for psoriasis, which he had been suffering from for 9 months. He did not appear to have any symptoms suggestive of obstructive sleep apnea. His body mass index was 19 kg/m². A neurological examination, including eye movement and the visual field, was normal, except for bilateral disc swelling. A mass-occupying lesion and dural venous thrombosis were excluded by magnetic resonance imaging (MRI) and magnetic resonance venography of the brain, which only showed tortuosity of the optic nerves and dilatation

of the optic nerve sheaths (Figure 1). Moreover, a complete blood count, comprehensive metabolic panel, and vasculitis screening test were normal. A spinal tap to measure the cerebrospinal opening pressure was planned, but the patient adamantly refused this procedure. **PTCS**, from excessive application of the topical steroid, was believed to be the cause of the patient's headache and disc swelling. Therefore, he was administered **acetazolamide** 500 mg twice daily and advised to stop the topical steroid. Tacrolimus was also initiated by the dermatology service to treat his psoriasis. A funduscopy examination at a 2-month follow-up visit showed improvement with return of spontaneous venous pulsation. Additionally, the headache had completely resolved.

Written/verbal consent was not obtained from the patient because non-routine procedures were not used in this case report. Neither the patient's name nor his medical record or any other identifying features were provided in this case report. Ethical approval was not necessary because the IRB in our institution does not require written consent for case reports.

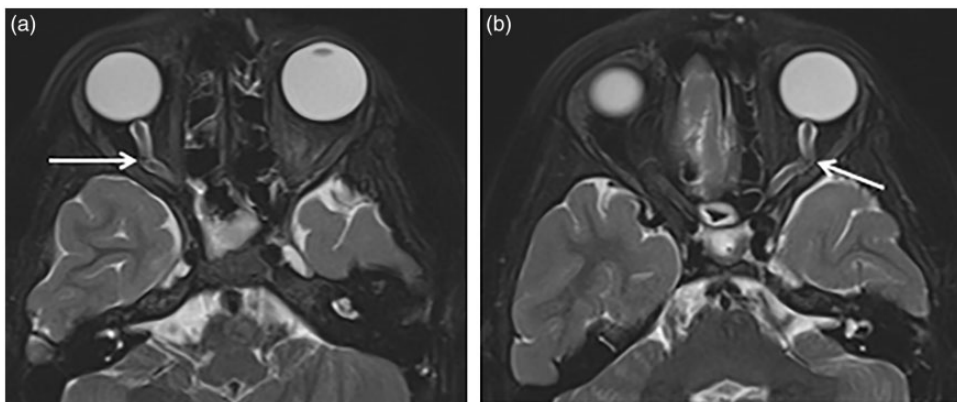


Figure 1. (a) Axial T2-weighted fat saturation magnetic resonance image of the orbits showing tortuosity of the right optic nerve with dilatation of the optic nerve sheath (white arrow). (b) Axial T2-weighted fat saturation magnetic resonance image of the orbits showing tortuosity of the left optic nerve with dilatation of the optic nerve sheath (white arrow).

Discussion

Although increased intracranial pressure was not confirmed by a spinal tap and measurement of opening pressure, the presence of disc swelling, normal MRI/magnetic resonance venography of the brain, and tortuosity and dilatation of the optic nerves strongly supported the diagnosis of PTCS. Moreover, improvement of disc swelling after cessation of the topical steroid indicated that this was the culprit for the patient's PTCS.

Several factors have been implicated in the cause of PTCS. Early recognition, withdrawal, and treatment of risk factors can prevent irreversible blindness related to PTCS. Systemic steroids that are administered for various autoimmune disorders have been found to cause PTCS.² Interestingly, systemic steroid withdrawal is also associated with PTCS.³ However, this is the first report on an association between excessive topical steroid use and PTCS.

A total of 5% to 10% of topically applied medications become absorbed through the skin.⁴ Therefore, we believe that our patient had considerable absorption and accumulation of steroid through daily excessive topical application. Topical steroids are extensively used for various inflammatory skin disorders. Moreover, topical steroids are frequently obtained from over the counter shelves. Therefore, prompt and effective measures must be exerted to educate clinicians, pharmacists,

and the public on the risk of PTCS from excessive steroid topical application.

Declaration of conflicting interest

The authors declare that there is no conflict of interest.

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