sels. No local anesthesia was used and no complications were noted during the procedure. The patient left our clinic in stable condition but returned to the hospital 1 hour later with dizziness and palpitations. Her vital signs were unremarkable but her right infraorbital area showed moderate painless swelling without erythema. There were mild conjunctival injection and chemosis but no proptosis, ptosis, or motility deficits. Visual acuity remained unchanged and intraocular pressure was 11 mm Hg. A serum phenothiazine panel drawn 3 hours after injection revealed the concentration of chlorpromazine to be 20 ng/mL (minimum reporting limit was 10 ng/mL). The patient was placed on electrocardiographic monitoring, and her symptoms eventually resolved without intervention. She was discharged from the emergency department and was followed up in our clinic the following day. She reported no further systemic symptoms, her periorbital swelling had resolved, and her eye pain remained subsided.

Comment. Chlorpromazine reaches therapeutic systemic levels when used at an oral dosage of 200 to 400 mg/d. Common adverse effects of retrobulbar chlorpromazine injections include transient palpebral edema and chemosis. Transient ptosis, sterile orbital cellulitis, chronic orbital inflammation, neurotrophic corneal ulcer formation, and pigmentary degeneration of the retina have also been described. Of the 9 patients in the series by Estafanous et al, 1 1 developed nausea and vomiting following by a brief episode of loss of consciousness. Per the authors' report, it was unclear whether the latter reaction could be directly attributed to the injection or represented a vasovagal response. In the case series of 20 patients by Chen et al and the report of 60 patients by McCulley and Kersten, 3 no systemic complications were noted.

To our knowledge, this is the first case of adverse effects experienced by a patient after retrobulbar chlorpromazine injection due to infiltration of the drug into systemic circulation. We hypothesize that the mechanism of systemic delivery was either infiltration of the drug into one of the smaller arterioles of the retrobulbar compartment or extravasation through the dural sheath. The latter mechanism would seem more likely considering the 1991 radiographic study by Zahl et al who revealed tracking along the optic nerve sheath and infraorbital spread of local anesthetic after a peribulbar injection.

In summary, we urge caution and vigilance during and after retrobulbar chlorpromazine injections. Although the risk of systemic spreading of any medication injected into the retrobulbar space is small, awareness of the anticholinergic and α-adrenergic antagonistic activity of chlorpromazine is vital for patient counseling and treatment.

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Dent in the Forehead: A Rare Manifestation of Metastatic Cancer

A 67-year-old woman had a sunken deformity of her right brow associated with recurrent pain. Her medical history included herpes zoster, lymphoma, and breast cancer. Imaging revealed destruction of the right frontal bone and lateral wall of the right orbit. Despite the uniform lytic appearance on imaging, biopsy of the orbit revealed metastatic breast carcinoma. This case represents a remarkable level of unilateral bone destruction without significant symptoms, which is unusual for breast metastasis, and illustrates the importance of a tissue diagnosis of orbital masses.

Report of a Case. A 67-year-old woman had a dent of her right brow associated with pain radiating to the temple for 2 to 3 weeks. She was otherwise asymptomatic. Her medical history included breast cancer in 2001 treated with modified radical mastectomy, chemotherapy, and radiation as well as follicular lymphoma in 2007 treated with rituximab and chemotherapy. She had right V1 shingles in 2009. Pain lasted only 6 weeks.

Ophthalmologic examination revealed visual acuity of 20/50 OU, normal pupils, full extraocular motion, no globe dystopia, normal levator function, a sunken deformity of the right brow (Figure 1), and Hertel measurements of 20 mm OD and 16 mm OS. There was no tenderness, edema, or inflammation of the region of the deformity, conjunctiva, or surrounding periorbital region.

Computed tomography of the orbits showed nearly complete destruction of the right frontal bone, including the frontal sinus and supraorbital ridge, destruction of the roof and lateral wall of the right orbit, the anterior portion of the zygoma, the anterior middle cranial fossa, the right olfactory groove, and the superior right lamina papyracea, with replacement by soft-tissue density. No mass effect or destruction of fat planes in the orbit or scalp was seen (Figure 2). This lesion was thought to be consistent with a neoplasm, recurrence of follicular lymphoma, or plasmacytoma.

Biopsy of the lateral orbital rim revealed a poorly differentiated metastatic carcinoma, consistent with breast origin, that was estrogen and progesterone receptor positive. Bone and positron emission tomographic scans re-
revealed additional lesions in 2 ribs, 1 vertebral body, and the femur. She is currently being treated with fulvestrant, an estrogen receptor antagonist.

**Comment.** This case demonstrates several important points. The extensive unilateral (right-sided) bone loss surrounding the orbit, while producing few symptoms or signs, is highly atypical. The most common causes of destructive bone lesions in patients older than 40 years are bone metastasis, multiple myeloma, and lymphoma. Our patient had histories of breast cancer and lymphoma, both previously treated and in remission. Breast cancer frequently metastasizes to highly vascularized bones, producing lytic lesions of the long bones, ribs, vertebrae, sternum, pelvis, and ribs. Breast metastases to the skull base typically manifest with progressive cranial neuropathies in 1 of 5 syndromes: orbital, paraspinal, middle fossa, jugular foramen, and occipital condyle. Despite the extensive cranial bone loss, our patient had no cranial neuropathies.

Myeloma and lymphoma are typically osteolytic, producing cortical and medullary bone destruction. Metastatic breast cancer can produce either osteoblastic lesions or a mixture of osteoblastic and osteoclastic lesions. In our patient, the nearly complete destruction of multiple skull bones is more typical of lymphoma or plasmacytoma than metastatic breast cancer. Of the 2 prior cancers, her lymphoma was treated more recently; her breast cancer was treated 10 years earlier and assumed to be cured. It is especially important to get a full history, including all previous cancers, as patients may not feel that a distant history of cancer in another body part is relevant to their ocular symptoms. This case illustrates the importance of obtaining a tissue diagnosis for appropriate treatment planning.

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Several interventions have been proposed as a means of making health care both more affordable and more evenly distributed among users. Although data exist on the impact of the Physician Quality Reporting Initiative (PQRI) on tracking health care quality with regard to general parameters (routine glycated hemoglobin levels, etc.) and regarding ophthalmologists’ adherence to practice patterns such as optic nerve examinations in patients with glaucoma, studies of the effect of pay for performance on ophthalmology are lacking. The purpose of this study was to determine whether implementation of the PQRI was associated with a change in documentation of ophthalmologists’ practice patterns.

Methods. We performed a retrospective review of patient records generated by diagnosis code. The setting of the study was an academic ophthalmology group (approximately 26 health care providers during the periods being studied). Patients with diagnoses that would qualify for the PQRI were randomly selected from the physicians who qualified for the PQRI bonus during the first full year of implementation (2007), and a group of patients was also selected from nonqualifying physicians. A comparison was made of documentation before and after implementation of the PQRI as well as documentation for patients of PQRI-qualifying and nonqualifying physicians.

The categories were as defined by the PQRI. For the glaucoma group of diagnosis codes, documentation of an optic nerve examination was recorded as yes. Similarly, for diabetes there were 2 data points recorded: communication with the primary care provider and documentation of clinically significant macular edema. For macular degeneration, discussion of Age-Related Eye Disease Study® vitamins and dilated macular examination were the end points. All statistics were calculated at \( \alpha = .05 \) using SAS version 9.2 statistical software (SAS Institute, Inc.).

This study was performed in accordance with the tenets of the Declaration of Helsinki, with institutional review board approval of retrospective data collection from the University of Oklahoma Health Science Center Office of Human Research Participant Protection.

Results. Among patients in the PQRI-qualifying group, 1613 unique patients were identified. A total of 140 patients’ records were reviewed and included for statistical analysis. The overall univariate (\( \chi^2 \)) analysis results after pooling all the diagnosis codes demonstrated a small but statistically significant decline in the documentation of practice patterns in the pre-PQRI period compared with the post-PQRI period. Among the patients, 80.7% had documentation that met PQRI criteria in the year preceding implementation, compared with 75.7% in the first year of PQRI implementation (\( P < .001 \)).

Among the patients in the nonqualifying physician group, 2774 unique patients were identified. A total of 267 patients’ records from the nonqualifying group were reviewed and analyzed. The overall univariate (\( \chi^2 \)) analysis results after pooling all the diagnosis codes demonstrated a small but statistically significant decline in the documentation of practice patterns in the pre-PQRI period vs the post-PQRI period. The compliance rates were 80.9% in the pre-PQRI year and 77.9% in the first year of PQRI implementation (\( P < .001 \)).

Finally, the documentation of practice patterns before and during PQRI implementation was compared between the qualifying and nonqualifying groups using univariate as well as multivariate analysis. Univariate analysis revealed no statistically significant difference (\( P = .54 \)). For multivariate analysis, we used a logistic regression model. Comparing the qualifying and nonqualifying groups, there was no statistically significant difference in the documentation of practice patterns before (\( P = .76 \)) or during (\( P = .56 \)) PQRI implementation.

Comment. Our results indicate that implementation of the PQRI did not result in an improvement in the documentation of practice patterns. The absolute numbers reported may not apply to other practice environments and may be biased by the inadequacies of a retrospective study using paper records. However, these findings support the hypothesis that the PQRI did not positively affect documentation and, by extrapolation, may not have influenced clinical care in a meaningful way. Given the tremendous amount of resources being devoted to the reformation of health care delivery in the United States, we propose that policy interventions should undergo the same rigorous outcomes testing and evidence-based implementation expected of any other aspect of health care delivery.

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