involvement was noted in 11 patients in each branch. These data hint that arteritis may be more prevalent in the frontal branch than the parietal branch. Notably, in the majority of patients who had imaging signs of temporal arteritis, abnormalities were present in one branch but not the other, at least on one side. Although neuroimaging is not equivalent to the gold standard of histopathological analysis, this result suggests that selective involvement of a single branch of the superficial temporal artery is not rare.

Bilateral temporal artery biopsy is sometimes performed to improve the chance of obtaining a positive result, especially if systemic symptoms are present. However, only a handful of patients will have a negative biopsy finding on one side and a positive biopsy finding on the other side. If a second biopsy is contemplated, it may be more fruitful to sample the other branch of the artery on the same side rather than the same branch on the other side. In the future, surgeons should record whether they have biopsied the frontal or parietal branch so that data can be gathered to determine which branch is inflamed most frequently. This information may increase the diagnostic yield of temporal artery biopsy.

Figure 2. Representative sections from the frontal branch of the left superficial temporal artery, all showing granulomatous arteritis and mural thickening (hematoxylin-eosin, original magnification ×12).

**Systemic Uptake of Chlorpromazine After Delivery via Retrobulbar Injection**

Severe pain can manifest in blind eyes as well as eyes with useful vision. Patients who fail conservative therapy with oral analgesics or topical steroid and cycloplegic eyedrops can undergo more aggressive measures. Although enucleation is the definitive treatment, some patients may not be medically or psychologically ready for this. As an alternative, retrobulbar alcohol injections can be used. More recently, chlorpromazine, a phenothiazine-class antipsychotic, has gained popularity. Initially described in the 1980s, reports have suggested that it provides superior pain control with a good response rate and fewer complications than alcohol injections. Previously reported adverse effects due to chlorpromazine injections have all been localized to the intraorbital or periorbital region. Herein, we describe a patient treated with retrobulbar chlorpromazine injection who subsequently developed systemic symptoms similar to those observed in patients receiving enteral chlorpromazine.

**Report of a Case.** A 63-year-old woman visited our clinic 10 years after surgical repair for total rhegmatogenous retinal detachment in her right eye at an outside hospital. Her visual acuity was hand motions, with an afferent pupillary defect and intraocular pressure of 42 mm Hg. B-scan ultrasonography showed persistent retinal detachment.

A retrobulbar injection was performed to alleviate her ocular pain. Two milliliters of 25-mg/mL chlorpromazine was injected with a retrobulbar needle, taking care to ensure the drug was not injected into any major ves-
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.2-4 Of the 9 patients in the series by Estafanos and colleagues,1 1 developed nausea and vomiting following 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 that revealed tracking along the optic nerve sheath and intracranial 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 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.

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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-