for redetachment or reopening the posterior exit wound, and after resolution of the scleritis there were no orbital inflammatory signs to warrant surgical treatment for that purpose. Furthermore, complete removal of PFO would prove challenging if not impossible because of its liquid nature that would pose difficulties in identifying it within the orbit as well as the multiple locations secondary to local spread. It is possible that a localized inflammatory reaction within the orbit could cause fibrosis and encapsulation of the PFO.

Conclusions

PFCLs should be avoided in perforating eye injuries because they have a low surface tension and can easily track into the orbit. Once in the orbit, removal could prove challenging and unsuccessful. Posterior extension of PFCLs into the central nervous system has not been identified and is unlikely due to anatomical boundaries such as orbital fat, tenons capsule, and optic nerve sheath.

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References

1. Chang S, Ozmert E, Zimmerman NJ. Intraoperative perfluorocarbon liquids in the management of proliferative vitreoretinopathy. *Am J Ophthalmol*. 1988;106:668-74.
2. Chang S, Lincoff H, Zimmerman NJ, Fuchs W. Giant retinal tears. Surgical techniques and results using perfluorocarbon liquids. *Arch Ophthalmol*. 1989;107:761-6.
3. Chang S, Reppucci V, Zimmerman NJ, Heinemann MH, Coleman DJ. Perfluorocarbon liquids in the management of traumatic retinal detachments. *Ophthalmology*. 1989;96:785-91; discussion 791–2 .
4. Peyman GA, Schulman JA, Sullivan B. Perfluorocarbon liquids in ophthalmology. *Ophthalmic Lit*. 1996;1:62.
5. Sparrow JR, Jayakumar A, Berrocal M, Ozmert E, Chang S. Experimental studies of the combined use of vitreous substitutes of high and low specific gravity. *Retina*. 1992;12:134-40.
6. Velikay M, Wedrich A, Stolba U, Datlinger P, Li Y, Binder S. Experimental long-term vitreous replacement with purified and non-purified perfluorodecalin. *Am J Ophthalmol*. 1993;116:565-70.
7. Figueroa MS, Casas DR. Inflammation induced by perfluorocarbon liquid: intra- and postoperative use. *Biomed Res Int*. 2014;2014:907816.
8. Lavezzo MM, Hokazono K, Zacharias LC, Takahashi WY. Perfluoro-n-octane in orbital cavity after posterior vitrectomy and suture of eye perforating injury: case report. *Arq Bras Oftalmol*. 2011;74:296-9.

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Concurrent diagnosis of giant cell arteritis and chronic lymphocytic leukemia in a temporal artery biopsy

Multiple reports have suggested an association between vasculitis and hematologic malignancies, but most have involved small or medium-sized vasculitides.[1,2] Concurrent malignancies have been shown to exist in 7.4% of patients with biopsy-proven giant cell arteritis (GCA), with 45% being hematologic in nature.[3] Although GCA and chronic lymphocytic leukemia (CLL) have been shown to exist concurrently, rarely has the temporal artery biopsy (TAB) led to a simultaneous diagnosis of CLL.[4–7] In this case study, we describe the unique finding of 2 simultaneous disease processes, GCA and CLL, on TAB.

Case Report

A 76-year-old male presented with a 2-month history of scalp tenderness and bitemporal pain that occurred episodically over several years. He denied any visual symptoms, jaw claudication, amaurosis fugax, diplopia, arthralgia, myalgia, or loss of appetite or weight, but confirmed occasional night sweats, which began several weeks before his visit. Relevant medical history included hypertension, cerebrovascular accident, and stable thoraco-abdominal aneurysm.

At presentation, best corrected visual acuity was 20/40 bilaterally. The afferent and efferent neuro-ophthalmic examinations were normal. Blood work revealed an elevated erythrocyte sedimentation rate of 93.0 mm/hour and a normal platelet count of 357×10^9/L. There was a high suspicion for GCA, so the patient was started on oral prednisone and underwent bilateral TAB.

Histopathologic analysis revealed no giant cells or lymphocytic infiltration within the arterial wall (Fig. 1). The absence of inflammatory activity within the artery indicated no active arteritis. However, there was intimomedial fibrosis and loss of the internal elastic lamina, consistent with healing arteritis. Notably, some lymphocytes were noted in the tissue surrounding the artery suggesting the presence of a lymphoproliferative disorder, such as B-cell CLL or small lymphocytic lymphoma.

Hematologic testing revealed an abundance of lymphocytes, at 8.74×10^9/L, and smudge cells. Peripheral blood flow immune-phenotyping identified a population (34%) of lymphocytes that expressed CD19, CD20, HLA-DR, CD23, and CD5. The cells were negative for CD10, CD38, and cyclin D. The population was lambda light-chain restricted. Results were compatible with CLL. The

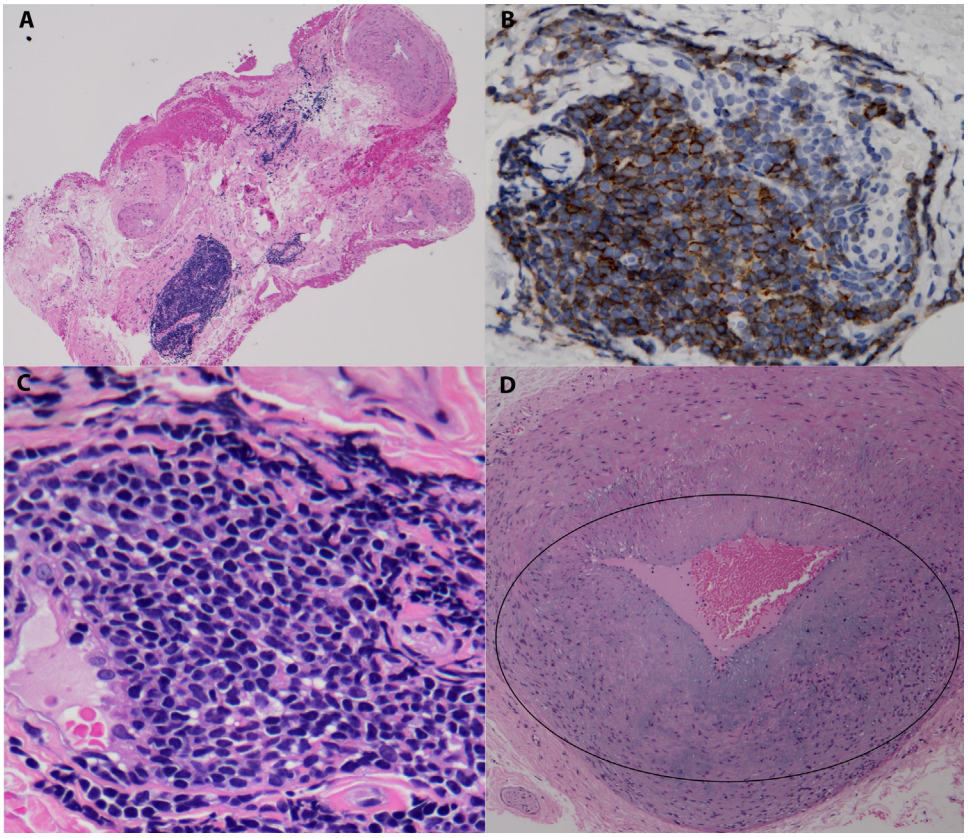

Fig. 1—Pathologic analysis of temporal artery biopsy. (A) Low power (250×) of noninflamed temporal artery and suspicious lymphocytic infiltrate in the included periadvential soft tissue (H&E). (B) High power (630×) of the monotonous small lymphocytic cell population (hematoxylin and eosin). (C) High power (400×) of CD 20 immunostain for B lymphocytes shows positivity in the majority of cells. (D) Medium power (100×) of temporal artery showing healed arterial injury (circle) with intimomedial fibrosis and loss of internal elastic lamina (hematoxylin and eosin).

patient was followed conservatively with regard to CLL, and oral prednisone was slowly tapered over several months. Continued surveillance revealed subjective and objective stability without recurrence of GCA symptoms or signs.

Discussion

In the present case, the tissue surrounding the artery contained lymphocytes with surface markers consistent with CLL. There were no B cells noted within the artery despite the abundance of B cells in CLL and their tendency to diffusely seed tissue.[7] The inflammatory infiltrate in GCA in the context of underlying CLL has been shown to be tightly regulated.[7] Thus, it would be rare to find an infiltrate composed of cells other than those usually found in GCA, which include giant cells, macrophages, and T cells. The reason for the lack of recruitment of B cells to the inflammatory infiltrate in GCA is unknown but believed to be related to cytokines, adhesion molecules, or chemoattractants.[7]

The absence of arterial inflammatory infiltration in the present case suggested healing arteritis. However, the usual complement of plasma cells in the GCA infiltrate has interestingly been shown to be markedly reduced in the adventitia of patients with concurrent CLL.[7] This may be due to an overall reduction in the amount of fully matured plasma cells, as this process is interrupted in B cell leukemias.[7]

Conclusion

TAB yields a diagnostic value that exceeds the diagnosis of vasculitis. The inflammatory infiltrate in GCA appears to be tightly regulated and limited to the usual cells found in most biopsy-proven GCA cases. The presence of inflammatory cells not typical of GCA should raise suspicion for an alternate diagnosis including lymphoproliferative malignancies. The present case is unique in that clinical and histopathological assessments supported the simultaneous presence of both diagnoses.

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References

1. Bourantas K, Malamou-Mitsi VD, Christou L, Filippidou S, Drosos AA. Cutaneous vasculitis as the initial manifestation in acute myelomonocytic leukemia. *Ann Intern Med*. 1994;121:942-4.
2. Fortin PR. Vasculitides associated with malignancy. *Curr Opin Rheumatol*. 1996;8:30-3.
3. Liozon E, Loustaud V, Fauchais AL, et al. Concurrent temporal (giant cell) arteritis and malignancy: report of 20 patients with review of the literature. *J Rheumatol*. 2006;33:1606-14.
4. Gonzalez-Gay MA, Blanco R, Gonzalez-Lopez MA. Simultaneous presentation of giant cell arteritis and chronic lymphocytic leukemia. *J Rheumatol*. 1997;24:407-8.
5. Disdier P, Harle JR, Costello R, Figarella-Branger D, Horschowski N, Weiller PJ. Horton's disease and chronic lymphoid leukemia. *Rev Med Interne*. 1992;13:472.
6. Webster E, Corman LC, Braylan RC. Syndrome of temporal arteritis with perivascular infiltration by malignant cells in a patient with follicular small cleaved cell lymphoma. *J Rheumatol*. 1986;13:1163-6.
7. Martinez-Taboada V, Brack A, Hunder GG, Goronzy JJ, Weyand CM. The inflammatory infiltrate in giant cell arteritis selects against B lymphocytes. *J Rheumatol*. 1996;23:1011-4.

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Detection of idiopathic intracranial hypertension, enabled by tele-ophthalmology

A significant portion of patients with undiagnosed ocular disease principally use medical services provided in a primary care setting.[1] However, primary care physicians often have limited formal training to perform ocular examination and are not confident in their direct ophthalmoscopy skills.[2] When a patient presents with an ill-defined ocular symptom, the primary care physician may refer the patient to a community ophthalmologist. Ophthalmologists are more likely to practise in urban settings,[3] and it can be particularly difficult for rural patients to access a specialty care clinic. Telehealth technology can create a digital bridge between the rural primary care setting and eye specialty services in North America.[4–6]

Canada has substantially advanced tele-ophthalmologic care to rural areas, including First Nations' communities.[6,7] In the United States, the Atlanta Veterans Affairs (VA) Eye Clinic has its own remote care initiative, called Technology-based Eye Care Services (TECS),[4] which builds on the Canadian model and on the principles of teleretinal care for patients with diabetes.[8,9] With TECS, qualified ophthalmic technicians are assigned to primary care clinics, where they perform a typical eye workup in addition to taking photographs of the fundus.

The technician screens for acute visual complaints (e.g., pain, sudden vision loss) and issues with the peripheral retina (e.g., recent flashes, floaters) and takes personal and family histories of eye disease, ocular surgeries, and ocular medications. Refraction and best-corrected visual acuity information is collected by using a Marco ARK-1S autorefractor with its built-in Snellen chart. Intraocular pressure (IOP) is assessed via rebound tonometry (e.g., iCare), and corneal pachymetry is assessed with a corneal pachpen (e.g., Accutome). Three mydriatic, nonstereoscopic, 45-degree color fundus photographs (posterior pole, nasal retina, superotemporal retina), along with an external photograph,[8] are taken for each eye with a Topcon NW4 or NW6 camera. This information is transmitted to a remote-reading ophthalmologist via a secure network connection, which utilizes the VA's pre-existing information technology infrastructure (VistA Imaging and Computerized Patient Record System). The reading physician reviews the history, vision, IOP, and photos; assesses overall image quality; and then determines a screening diagnosis, as well as appropriate follow-up, when necessary. The program is designed for the screening of common, age-related ocular diseases (e.g., diabetic retinopathy, glaucoma). However, the immediate availability of tele-ophthalmology enhances the care of patients in remote locations, as illustrated in our case report.

Case Report

A 35-year-old, obese (body mass index 35.8 kg/m^2), white male with a 10-year history of daily headaches and obstructive sleep apnea presented to a VA TECS site located 50 miles from the main VA Eye Clinic in a U.S. Department of Agriculture–recognized rural region[10] for a routine examination. The patient's headaches had started after he sustained a mild traumatic brain injury (TBI) during his military service. His headaches were described as bifrontal in nature and responsive to ibuprofen. He had been monitored closely by his primary care provider as well as a specialized VA TBI team for years. Overall, he and his care team felt that his headaches were stable in both character and frequency. Because TECS was readily available in his clinic and he had not been seen by a VA eye provider since 2009, he was referred for a free "glasses check."