Title

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CLINICAL VIGNETTE

An 81-Year-Old Woman with Giant Cell Arteritis: from Inpatient Diagnosis to Outpatient Management

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Introduction

Giant Cell Arteritis (GCA) is a large vessel vasculitis that affects branches of the aorta, and commonly presents as temporal arteritis. It is a well-described autoimmune disease, and early recognition and management is key to improving symptoms and reducing risk of vision loss.

We present a classic case of Giant Cell Arteritis including the intricacies of inpatient and outpatient management and the longitudinal care required.

Case Presentation

An 81-year-old female with hypertension, hypothyroidism, and hyperlipidemia presented to her primary care physician (PCP) with two weeks of jaw pain and scalp discomfort. She noted left sided jaw pain with chewing and found it difficult to finish her meals. She also developed left temporal pain and scalp itching. She did not have fevers, chills, weight loss, or rashes. The day prior to her presentation, she noted flickers of light in the visual field of her left eye that lasted for a few minutes, which she described as unusual but very beautiful. The next morning, she awakened to realize that she had lost vision in her left eye, and was only able to perceive light. She presented to her PCP, who instructed her to go to the Emergency Department (ED) for urgent evaluation.

On presentation to the ED, she was afebrile with normal vital signs. She was evaluated urgently by Ophthalmology and was found to have an afferent pupillary defect in the left eye as well as ischemic optic disc edema and only light perception on visual acuity. In the right eye, there were blurred margins at the optic disc and her visual acuity was 20/25. Her cardiac and pulmonary exams were normal and there were no focal neurologic deficits on exam, aside from her visual changes. Laboratory evaluation demonstrated an erythrocyte sedimentation rate (ESR) of 91 mm/hr and C-reactive protein (CRP) of 8.1 mg/dL. CBC was notable for a white blood cell count of 11.4/µL, hemoglobin of 10.2 g/dL, mean corpuscular volume 80fL, and platelet count of 695/µL. Chemistry panel, including renal function and liver enzymes, were within normal limits. Antiphospholipid antibodies were negative. MRI brain without contrast showed no acute infarct, hemorrhage or intracranial mass.

Given the patient's symptoms, exam findings and lab workup, the clinical presentation was most concerning for giant cell arteritis, but cardioembolic disease provoking acute central retinal artery occlusion was also considered. She was immediately started on pulse dose methylprednisolone 1 gram intravenously daily for 3 days. Additional imaging was obtained for further assessment. Temporal artery ultrasound showed no evidence of wall thickening or stenosis of the bilateral temporal arteries. Carotid ultrasound showed mild atherosclerotic plaque at the carotid bulbs with no hemodynamically significant stenoses. Transthoracic echocardiogram showed mild left ventricular hypertrophy with an ejection fraction of 65%, and agitated saline study showed no evidence of intracardiac or intrapulmonary shunt.

On her second day of pulse dose corticosteroids, she began to note flickers of light in her right eye, but noted that her temporal pain, scalp discomfort and jaw claudication had improved. Repeat ophthalmologic exam showed no changes in the bilateral eye examination from the day prior. Her steroid regimen was continued. On her third day of pulse corticosteroids she underwent a left-sided temporal artery biopsy, which showed segmental transmural inflammation consistent with partially treated temporal arteritis.

After completing 3 days of pulse dose corticosteroids, she was transitioned to oral prednisone 60mg daily, with plan for outpatient taper. She was also started on aspirin 81mg daily to reduce the risk of ischemic complications in GCA, famotidine to avoid steroid-induced gastritis, as well as trimethoprim/sulfamethoxazole to reduce the risk of Pneumocystis jirovecii pneumonia in the setting of immunosuppression from high-dose steroids. She continued to have left eye vision loss, but maintained vision in her right eye.

One week after discharge, she established care with Rheumatology as an outpatient. She had continued to do well after her discharge on high-dose oral prednisone without any recurrence of jaw pain, scalp pain, temporal pain, or vision changes. Repeat ophthalmologic exam after discharge had remained stable, and both her ESR and CRP had normalized on repeat lab testing. However, she did note that since discharge her home blood pressures readings were elevated above her baseline. On evaluation in clinic, her vitals were normal aside from a blood

pressure of 187/72 mmHg. Cardiac and pulmonary auscultation were normal, though she did have new 1+ pitting edema to the mid-shins bilaterally. Her antihypertensive regimen was thus intensified; her losartan dose was increased from 50mg daily to 100mg daily and she was started on amlodipine 5mg daily, in addition to maintaining her previous dose of hydrochlorothiazide 25mg daily. Despite all three antihypertensives, she did require use of clonidine intermittently for adequate control of her blood pressure.

Given the patient's clinical improvement and stable ophthalmologic exam, she was started on a taper of glucocorticoids as follows: prednisone 60mg daily x 2 weeks, which was decreased by 10mg every 2 weeks until 40mg daily, then tapered down by 5mg every 2 weeks until 20mg daily, then tapered by 2.5mg every 2 weeks until 10mg daily, and then finally tapered by 1mg a month. Early in the course of her taper, the use of the steroid sparing agent tocilizumab was considered to allow for a more rapid taper in the setting of steroid-induced hypertension. Unfortunately, the patient elected not to try tocilizumab due to prohibitive out-of-pocket cost. Use of methotrexate as a steroid-sparing agent was also discussed and initiated but was not tolerated due to nausea and fatigue and was later discontinued after 4 weeks. Ultimately, prednisone was tapered to 5mg daily without any recurrence of her GCA symptoms and with continued stability of her eye exam and inflammatory markers. Further tapering of prednisone was discussed, but the patient was reluctant to decrease the dose or stop prednisone entirely due to concern of disease recurrence affecting the vision in her contralateral eye. As a result, she was maintained on prednisone 5mg daily chronically and continued her disease remission.

Discussion

The case described above is a classic presentation of giant cell arteritis complicated by vision loss, and demonstrates multiple important learning points in the management of these patients. This includes the use of different diagnostic modalities such as imaging and temporal artery biopsy, as well as regimens for initial glucocorticoid dosing and taper, the complications of prolonged glucocorticoid treatment, and use of steroid sparing agents.

The diagnosis of GCA relies heavily on the findings of temporal artery biopsy, which serve as the gold standard for disease diagnosis.[1] Unfortunately, temporal artery biopsy can be difficult to schedule in a timely manner, and use of glucocorticoids prior to biopsy can affect the sensitivity of the results. Temporal artery biopsy is preferably done within 2 weeks of initiating oral steroids, but can be done up to 4 weeks after, and is usually performed by Ophthalmology, Otolaryngology, or Vascular Surgery. The classic pathological finding shows a transmural inflammatory infiltrate of the arterial wall with lymphocytes, macrophages, and giant cells.[1]

In recent years, the use of imaging modalities of the temporal arteries, including color doppler ultrasound, has helped establish the diagnosis of GCA in a non-invasive and timely manner. Imaging should be done within one week of initiating treatment, as treatment can significantly affect the likelihood of capturing a positive result. Positive color doppler ultrasound findings demonstrate a "halo sign", described as hypoechoic circumferential wall thickening of the vascular lumen, representing mural edema.[2] The sensitivity and specificity of color doppler temporal artery ultrasound can vary depending on the study, but one meta-analysis of eight studies involving 575 patients reported a sensitivity of 68% and specificity of 91% when compared to positive temporal artery biopsy.[3] As a result, use of temporal artery US may not effectively rule out GCA, but if positive in the appropriate clinical context, can reduce the need for temporal artery biopsy. As demonstrated in our case, the patient's temporal artery ultrasound was normal with no wall thickening or stenosis seen, which was discordant with the positive biopsy results.

While diagnostic studies are required to confirm the presence of the disease, it should not delay treatment, as the risk of untreated disease can lead to acute vision loss. Choice of initial glucocorticoid dosing is not the same for all patients suspected of having GCA. In patients presenting with GCA symptoms without vision loss, initiation of oral glucocorticoids is often sufficient, but in patients with threatened or established vision loss, pulse dose glucocorticoids are recommended.[4] Unfortunately, once vision loss occurs, it is rarely reversible, and use of pulse dose steroids in patients who already have vision loss is done to prevent symptoms in the contralateral eye. This was also highlighted in our case, as the patient's right eye did show optic disc changes suggestive of early ischemia, but treatment with high dose glucocorticoids salvaged the vision of her contralateral eye.

Once glucocorticoids are initiated, the steroid taper is usually standardized, as outlined in our case, but can be modified depending on patient response and development of adverse effects. Shorter tapers can be used if there is significant glucocorticoid toxicity. In cases where a steroid sparing agent, particularly tocilizumab, is used, shorter duration steroid taper regimens are possible.[5] As the dose of steroid is tapered, close monitoring is necessary to recognize symptoms of disease recurrence and treat accordingly.

In patients who are at high risk of glucocorticoid toxicity or disease relapse, use of steroid sparing agents is indicated. Tocilizumab, an IL-6 receptor antagonist, has been studied and found to be superior to standard dose glucocorticoid regimens for sustained glucocorticoid free remission.[6] For our patient, use of this medication was considered, but not pursued due to the cost and disease remission. Additionally, if there are contraindications to tocilizumab, such as a history of recurrent infections, gastrointestinal perforations or diverticulitis, or if cost is prohibitive, traditional oral disease modifying anti-rheumatic drugs, specifically methotrexate, can also be used as a steroid sparing agent.[6]

It is important to remain vigilant with regards to glucocorticoid toxicities and side effects. Use of long-term high dose steroids, which is necessary in almost all GCA patients, can result in elevations in blood pressure, blood sugar, fluid retention, psychiatric disturbances, weight gain, elevated intraocular pressures, and decreases in bone density. Additionally, high-dose steroids can significantly increase the risk of infections including bacterial pneumonias, fungal overgrowth, as well as reactivate latent infections such as tuberculosis and herpes zoster. As described above, our patient developed resistant hypertension requiring the addition of 2 antihypertensive medications to her previous regimen to control her blood pressure while on high-dose steroids.

Conclusion

This case demonstrates the importance of timely diagnosis, initiation of an appropriate steroid regimen, and monitoring response to glucocorticoid therapy, which are crucial for the management of GCA both during the inpatient hospitalization and longitudinally as an outpatient.

REFERENCES

1. **Salvarani C, Cantini F, Hunder GG**. Polymyalgia rheumatica and giant-cell arteritis. *Lancet*. 2008 Jul 19;372(9634):234-45. doi: 10.1016/S0140-6736(08)61077-6. PMID: 18640460.
2. **Schmidt WA, Natusch A, Möller DE, Vorpahl K, Gromnica-Ihle E**. Involvement of peripheral arteries in giant cell arteritis: a color Doppler sonography study. *Clin Exp Rheumatol*. 2002 May-Jun;20(3):309-18. PMID: 12102466.
3. **Arida A, Kyprianou M, Kanakis M, Sfikakis PP**. The diagnostic value of ultrasonography-derived edema of the temporal artery wall in giant cell arteritis: a second meta-analysis. *BMC Musculoskelet Disord*. 2010 Mar 8;11:44. doi: 10.1186/1471-2474-11-44. PMID: 20210989; PMCID: PMC2837862.
4. **Salvarani C, Cantini F, Boiardi L, Hunder GG**. Polymyalgia rheumatica and giant-cell arteritis. *N Engl J Med*. 2002 Jul 25;347(4):261-71. doi: 10.1056/NEJMra011913. PMID: 12140303.
5. **Stone JH, Tuckwell K, Dimonaco S, Klearman M, Aringer M, Blockmans D, Brouwer E, Cid MC, Dasgupta B, Rech J, Salvarani C, Schett G, Schulze-Koops H, Spiera R, Unizony SH, Collinson N**. Trial of Tocilizumab in Giant-Cell Arteritis. *N Engl J Med*. 2017 Jul 27;377(4):317-328. doi: 10.1056/NEJMoa1613849. PMID: 28745999.
6. **Mahr AD, Jover JA, Spiera RF, Hernández-García C, Fernández-Gutiérrez B, Lavalley MP, Merkel PA**. Adjunctive methotrexate for treatment of giant cell arteritis: an individual patient data meta-analysis. *Arthritis Rheum*. 2007 Aug;56(8):2789-97. doi: 10.1002/art.22754. PMID: 17665429.