A case report of pericardial effusion in giant cell arteritis

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ABSTRACT

Background: Giant cell arteritis (GCA) is an immunologic disorder affecting large and medium size vessels, especially focusing on the external branches of the aorta. The most commonly affected vessel is the temporal artery, and it usually presents with headache in elderly patients. The participation of other vessels, such as the aorta, can result in serious, life-threatening complications.

Case presentation: We present the case of a patient admitted to our hospital, diagnosed with GCA and pericardial effusion, which is a rare combination, with only a few case reports in the literature.

Conclusion: Pericardial effusion in the context of GCA is rare but it can be dangerous, and by presenting such a case, we want to underline the importance of checking for extracranial involvement when GCA is suspected.

Keywords: Case report, giant cell arteritis, temporal arteritis, pericarditis, pericardial effusion; heart.

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Background

Giant cell arteritis is a disease of unknown etiology where mostly large and medium size vessels are involved in a granulomatous inflammatory process. It is a form of vasculitis where inflammatory cells, such as CD4 Lymphocytes and Macrophages, infiltrate the vessel wall, presented as panarteritis. Giant cells can be observed but are not necessary for the diagnosis. It affects patients older than 50-year old, and the mean age at incidence is reported to be 76.6 years [1].

Giant cell arteritis (GCA) usually involves the extracranial branches of the carotid and the temporal artery is affected more commonly. It can manifest as headache in the temporal area and tenderness of the scalp to touch of new onset. Usually, it is accompanied by constitutional symptoms, such as low-grade fever and fatigue. Jaw claudication can also occur as lassitude or pain in the chewing muscles. The laboratory tests usually show elevated C-Reactive Protein (CRP) and Erythrocyte Sedimentation Rate (ESR). The criteria for the classification were described by the American College of Rhematology (ACR) in 1990 [2] and consist of the age of onset to be older than 50 years, new onset of headache, tenderness in palpation of the temporal area or decreased pulsation, elevated ESR >50 mm/hour using the Westergren method and abnormal biopsy of the temporal artery, indicative of vasculitis with the characteristic inflammatory infiltration, mentioned above.

Case Presentation

A 72-year-old female patient came to us complaining of fever of recent origin with headache in the temporal areas of the scalp. She has a history of a removed ovary cyst with a biopsy not revealing a malignancy. The previews days she was hospitalized for the investigation of fever, which was attributed to a urinary tract infection from an *E. coli* and was administered Ceftriaxone intravenously, which was then upgraded to Piperacillin/Tazobactam in our hospital. She didn't present jaw claudication or tenderness on palpation of the temporal areas. The physical examination didn't show any signs of infection and the auscultation didn't reveal any murmur. She had mild anemia (Hct:29.9, Hb:9.9, MCV:88.2, and MCH:29.2) with normal WBC:10.83 and an ESR:74 and CRP:17.3. The rest of the blood tests and the urinalysis were unremarkable. A temporal artery biopsy revealed giant cell arteritis. Mild pericardial effusion was portrayed in the CT scan of the chest. She was administered intravenous prednizolone of 1 mg/kg of body weight and, continued per os methylprednizolone, calcium, vitamin D, proton pump inhibitors and biphosphonate agents. The symptoms and the pericardial fluid resolved gradually.

Discussion

GCA can also affect other large vessels, the most common of which is the aorta. The 1990 ACR classification

criteria are still used today and they only include symptoms from the temporal artery. There are not established criteria for the involvement of other large vessels. Prospective studies using CTA show a rather common participation of the aorta though, either in the form of thickened wall or presented as an aneurysm, at a percentage of 45%-65% [3,4]. Studies using Fludeoxyglucose-Positron Emission Tomography (FDG-PET) have detected involvement of the aorta in >50% of patients with temporal arteritis [5]. Symptoms of the aortic involvement are not always present. Most often the patient complains about lower limb claudication. At physical examination vascular bruits and aortic regurgitation murmur can be noted. Pain in the chest or the abdomen can indicate a latent aneurysm of the aorta. Other vessels which are less commonly affected are the brachiocephalic trunk, the carotids, subclavian and axillary arteries, and even rarer there is involvement of the splanchnic, renal, and femoral arteries [4].

In general, patients with temporal arteritis don't seem to have increased risk of death, when compared with the general population mortality rates [6]. When GCA is affecting large vessels, though, and especially when aorta is involved, it is associated with increased mortality [7]. The development of an aortic aneurysm is the most serious complication, which can result in rupture and death. Another serious complication is the permanent loss of vision that occurs when ophthalmic and retinal arteries are affected. In milder cases, transient loss of vision, also known as amaurosis fugax can occur. Critical limb ischemia has also been reported but it is rare. There are few reports of acute myocardial infarction due to inflammation of the coronary arteries in the context of GCA [8,9].

Even fewer are the reports of pericardial effusion that can correlate with GCA [10]. Pericarditis is the inflammation of the pericardial sac, caused by either infectious or immunologic disorders. Some researchers have proposed that GCA occurs in a spectrum of clinical manifestations, ranging from isolated cranial involvement, cranial and large vessel involvement and large vessel involvement without cranial participation [11]. Regarding the case of pericardial effusion, the pathophysiology is unknown. To the best of authors' knowledge, only a few case reports have described this condition and it is not always associated with aortic manifestations. It is only logical to assume, that vasculitis of the coronary arteries is present. Other possible pathophysiological mechanisms include inflammatory cytokines, immunological reactions, and immune complexes deposition in the pericardium, causing inflammatory interstitial lesion with or without granulomas [12]. The exact prevalence of this implication is unknown but Zenone et al. [13] reported a prevalence of 3,5% of pericardial effusion in a retrospective study of 114 patients with GCA. Tiosano et al. [14] have found that pericarditis is independently associated with GCA, especially in patients younger than 70-year old [14].

It is well known that Polymyalgia Rheumatica is a disease that can present in the context of giant cell arteritis and it comes with constitutional symptoms of low-grade fever and fatigue and achiness and stiffness on the shoulders and the pelvic girdle. The incidence of pericardial effusion in patients with polymyalgia rheumatica and a negative temporal artery biopsy is unknown, but reports of such cases exist [15].

Conclusion

In patients with biopsy diagnosed GCA, it is not a common practice to examine the heart or the aorta. Examining the patient for pericardial rub sound and aortic bruits should be regular in these patients. Given that the implications of these conditions might be very severe, if untreated, we suggest early checking with CT angiography or PET CT scan and heart ECHO. Contrariwise, in a patient with pericarditis, and a negative testing for common causes, before attributing this condition to unknown or idiopathic origins, the physician should consider checking for GCA in the differential diagnosis.

What is new?

Pericardial effusion is rare but serious in the context of Giant Cell Arteritis. The authors want to point out the significance of early checking with CT angiography or PET CT scan and heart ECHO when Giant Cell Arteritis is diagnosed to rule out pericardial effusion.

List of Abbreviations

GCA Giant cell arteritis

Consent for publication

Written informed consent was obtained from the patient.

Ethical approval

Ethical approval is not required at our institution for publishing an anonymous case report.

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Summary of the case

1	**Patient (gender, age)**	Female, 72
2	**Final diagnosis**	Pericardial effusion in the context of Giant Cell Arteritis
3	**Symptoms**	Fever, Headache
4	**Medications**	Methylprednizolone, calcium, vitamin D, proton pump inhibitors and biphosphonate agents
5	**Clinical procedure**	Chest CT scan
6	**Specialty**	Internal Medicine