Case Report

Acute Myeloid Leukemia Associated with Necrotizing Temporal Arteritis

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ABSTRACT. The clinical presentation of new onset headache, temporal artery tenderness, and elevated inflammatory markers is classical for giant cell arteritis (GCA). We describe a patient who presented with clinical features of GCA, but was found to have isolated necrotizing arteritis of the temporal artery in the setting of acute myeloid leukemia. This report emphasizes that if the temporal artery histology is not classical for GCA, or if the response to treatment is incomplete, further evaluation for systemic or paraneoplastic vasculitis should be considered. (J Rheumatol 2003;30:846–8)

Key Indexing Terms:
TEMPORAL ARTERITIS LEUKEMIA VASCULITIS

In general, giant cell arteritis (GCA) is usually easily distinguishable from other types of vasculitis by clinical features and histopathologic findings. When it is present, the 1990 criteria for the classification of GCA yield a specificity of 91.2% for the diagnosis[1]. We describe a patient who fulfilled criteria for the diagnosis of GCA; however, temporal artery histology showed necrotizing arteritis without classical features of GCA. Evaluation led to the diagnosis of acute myeloid leukemia.

CASE REPORT

A 68-year-old woman was seen in the Rheumatology Division for evaluation of a 7 week illness manifesting as occipital and frontal headaches, low grade fevers, anorexia, fatigue, and a weight loss of 12 pounds. Early in the course of the illness, she had noted rhinorrhea and cough, which improved taking a cephalosporin antibiotic. Her history included cigarette smoking, oxygen dependent chronic obstructive pulmonary disease, and paroxysmal atrial fibrillation. Physical examination was notable for posterior auricular scalp tenderness, as well as bilateral temporal artery nodularity and tenderness. No aortic arch bruits were noted, and brachial artery blood pressures were equal.

Initial laboratory studies revealed an elevated erythrocyte sedimentation rate (ESR) of 121 mm/h, a low hemoglobin of 9.6 g/dl (normal 12.0–15.5 g/dl), an increased mean corpuscular volume (MCV) of 105.5 fl (normal 81.6–98.3), total leukocyte count 7.2×10^9/l (normal 3.5–10.5 × 10^9/l), and platelets 200×10^9/l.

The white blood cell differential was as follows: polymorphonuclears 85%, bands 1%, lymphocytes 5%, monocytes 1%, eosinophils 1%, metamyelocytes 1%, myelocytes 1%, atypical lymphocytes 3%.

A left temporal artery biopsy (0.6 cm length) was performed and revealed focal, transmural, acute necrotizing vasculitis without giant cells or a granulomatous component (Figure 1). Stains for fungi and tubercle bacilli were negative. The histology was suggestive of an antinuclear cytosplasmic antibody (ANCA) associated vasculitis, but both cytoplasmic ANCA and perinuclear ANCA tests were negative. The anemia was attributed at least in part to her vasculitic process. The markedly elevated MCV and white cell differential were suggestive of an evolving myelodysplastic or myeloproliferative process. However, since the total white blood cell and platelet counts were normal, treatment of vasculitis was initiated and further evaluation was deferred to her followup visit. Prednisone therapy (60 mg/day) resulted in rapid resolution of the headaches and scalp tenderness.

One month after the temporal artery biopsy she was reevaluated. She continued to be unwell, experiencing intermittent fevers up to 38.5°C. On examination, there was no evidence of cutaneous or end-organ involvement by a systemic vasculitic process. The ESR remained elevated (72 mm/h) and anemia persisted (hemoglobin 9.2 g/dl). The persistent systemic symptoms and incomplete response to steroids suggested the presence of an alternative or second disease process. Further investigations included serum B12 and folate concentrations that were normal, and a peripheral smear showed oval and round macrocytes, elliptocytes, and occasional blasts. Flow cytometric immunotyping of the peripheral blood revealed increased blasts expressing CD13, CD33, CD34, and HLA-DR. This expression pattern was consistent with a proliferative disorder of myeloid lineage.

A bone marrow biopsy was diagnostic of acute myeloid leukemia of myelocytic type (FAB-M2). Myeloblasts represented roughly 30% of bone marrow cells. Cytogenetic studies were performed and of 20 metaphases, each showed a partial lack of the short arm of chromosome 5, i.e., (5q–), an anomaly occurring in relatively aggressive hematologic neoplasia. Given her overall poor medical status and cytogenetic prognosis, chemotherapy was not administered. Instead, conservative support measures were recommended.

DISCUSSION

To our knowledge, necrotizing temporal arteritis has never been described in association with an acute myeloproliferative disorder.

Hematologic malignancies may be associated with vasculitic syndromes. The majority of cases are vasculitides of small or medium size arteries, cutaneous leukocytoclastic vasculitis being the most common form[2,3]. Giant cell

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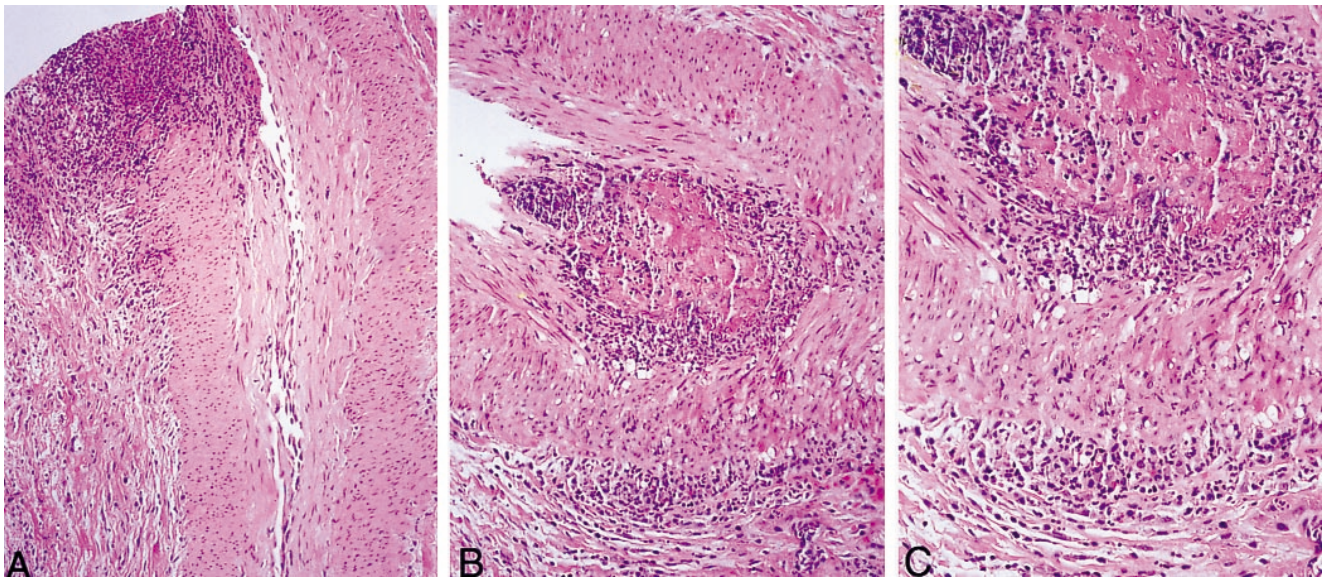

Figure 1. Longitudinal (A) and cross sections (B, C) of the artery show focal transmural (A) acute necrotizing vasculitis lacking giant cells or a granulomatous component. A, H&E ×100; B, H&E ×160; C, H&E ×250.

arteritis, which involves mainly large arteries, is only rarely associated with hematologic malignancy[4-7]. The vasculitic syndrome associated with hairy cell leukemia often resembles polyarteritis nodosa (PAN) and temporal artery involvement has been reported[6,8].

The concurrence of biopsy proven typical GCA and chronic lymphocytic leukemia has been reported[4]. Although patients with chronic myelomonocytic leukemia can also develop a systemic vasculitis resembling PAN, at least one case has been reported wherein neutrophilic temporal arteritis was noted at autopsy[7]. Lymphoma is also rarely associated with temporal "arteritis" due to neoplastic infiltration of the temporal artery[5].

Necrotizing vasculitis is characterized by fibrinoid necrosis of vessel walls. Isolated necrotizing vasculitis of the temporal artery is exceedingly rare. Eosinophilic infiltration with necrotizing vasculitis of the temporal artery not associated with other features of Churg-Strauss syndrome has been described[9]. In 2 other atypical cases of temporal arteritis, small vessel involvement of the vasa vasorum was seen, albeit without features of GCA[9].

Systemic necrotizing vasculitis with temporal artery involvement can mimic GCA. In a series of 27 patients with necrotizing temporal arteritis, the majority had classic symptoms of GCA, but the presence of systemic manifestations and frequent ANCA positivity suggested an alternative diagnoses. The final diagnoses of the latter patients were PAN, Churg-Strauss syndrome, microscopic polyangiitis, Wegener's granulomatosis, hepatitis B virus related PAN, hepatitis C virus related cryoglobulinemic vasculitis, and rheumatoid vasculitis[10]. Our patient had no clinical evidence of a systemic vasculitic process and was found to be serologically ANCA negative. We hypothesized, therefore, that the "temporal arteritis" was a paraneoplastic manifestation of her underlying leukemia. The hematologic disorder was likely already present at the time of diagnosis of vasculitis, as evidenced by the abnormal MCV and white blood cell differential. Although the 2 disease processes were temporally related, it remains possible that they were pathogenetically unrelated.

This case highlights the importance of identifying specific characteristics of GCA on temporal artery biopsy. These include intimal thickening and the formation of granulomas containing multinucleated histiocytes and giant cells[11]. In summary, if the histologic picture is not classic for GCA, or if the response to the treatment is slow or incomplete, studies for systemic or paraneoplastic vasculitis should be pursued.

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