Published in final edited form as:

Ann Allergy Asthma Immunol. 2009 April ; 102(4): 351–352. doi:10.1016/S1081-1206(10)60344-4.

MONTELUKAST-ASSOCIATED CHURG-STRAUSS VASCULITIS: ANOTHER ASSOCIATED REPORT

Jonathan G. Black, MD^{*}, James R. Bonner, MD^{*}, Dennis Boulware, MD^{*}, and Aleodor A. Andea, MD^{*}

Jonathan G. Black: allblackmd@gmail.com

^{*}UAB Hospital System, Birmingham, Alabama

A 37-year-old woman presented to her allergist's office after 6 months of dry cough. Before her appointment, she was treated sporadically with inhaled corticosteroids, albuterol, and antibiotics but showed no improvement. On evaluation, aeroallergen skin prick test results were negative; a complete blood cell count was normal, with 4% eosinophils; and her chest radiograph showed only peribronchial thickening. She was empirically administered montelukast for possible cough variant asthma.

Within 1 month, her cough began to worsen, and she developed dyspnea that required 2 pulse corticosteroid treatments for relief. Inhaled salmeterol and budesonide were added. Chest computed tomography revealed a left-sided suprahilar opacity. The patient was referred to a pulmonologist for bronchoscopy. At that visit, a repeated chest radiograph showed infiltrates in the left upper lobe and lingula, and lavage fluid from the bronchoscopy showed predominant eosinophilia. Shortly thereafter, the patient developed a vesicular rash on her head and arms, fever, myalgias, hemoptysis, pleuritic chest pain, and worsening dyspnea. On examination, she had distended neck veins with bilateral infiltrates and cardiomegaly on her chest radiograph.

On admission to the hospital, her echocardiogram showed a depressed left ventricular ejection fraction of 42% with a pericardial effusion. Pericardiocentesis yielded fluid with a differential count significant for eosinophilia of 42%. She also had peripheral eosinophilia of 24%. A biopsy specimen of the hand revealed necrobiotic collagen with granulomas and an eosinophilic infiltrate (Fig 1). The patient improved with administration of intravenous inotropes, diuretics, and corticosteroids. Montelukast use was discontinued. During the next year, she was weaned off oral corticosteroids, and she now has intermittent asthma that is controlled by daily inhaled mometasone therapy. She also developed nasal polyps that were treated successfully with surgery.

Churg-Strauss vasculitis (CSV) is a small- to medium-sized vessel vasculitis associated with asthma and peripheral eosinophilia. This patient had 4 of the 6 American College of Rheumatology criteria for a CSV diagnosis (asthma, peripheral eosinophilia, pulmonary infiltrates, and extravascular eosinophils), biopsy sample, findings consistent with Churg-Strauss vasculitis, and she later developed a fifth (nasal polyps). In patients with CSV, indicators of poor prognosis include cardiac and gastrointestinal involvement.¹ In a study by Guillevin et al,¹ 96 patients with CSV were followed up to evaluate outcomes. This study showed 39% mortality with myocardial disease, and most of these patients died during the acute phase of their illness. Corticosteroids are the first-line treatment for CSV, and remission rates are 80% to 90% with this therapy.

In the past decade, there seems to be an increase in the diagnosis of CSV with the introduction of leukotriene modifiers, such as montelukast. Wechsler et al² published a 6-patient case series in 2000 that concluded that the relationship is coincidental. The authors postulated that the vasculitic component of CSV is suppressed by corticosteroids and that the addition of montelukast allows for the withdrawal of corticosteroids, thus allowing the vasculitis to be “unmasked.” Lofdahl et al³ showed in a double-blind, placebo-controlled trial that montelukast can allow for tapering of inhaled corticosteroids, but this may not be the case in all patients.

Other case reports have shown a diagnosis of CSV in association with montelukast while inhaled corticosteroids were not being weaned. Sabio et al⁴ described a 49-year-old patient who developed rash and duodenal necrotizing vasculitis 5 months after switching from salmeterol to montelukast. Villena et al⁵ described a patient who developed rash, eosinophilia, and bilateral pulmonary infiltrates 4 months after beginning montelukast treatment while taking inhaled corticosteroids and bronchodilators only. Solans et al⁶ described an asthmatic patient who had never received oral corticosteroids who developed CSV 4 months after initiating montelukast treatment.

In summary, this patient developed corticosteroid-dependent asthma and biopsy-proven CSV with a poor prognostic indicator of cardiac involvement after starting montelukast treatment. She survived with cessation of montelukast treatment, and currently her asthma is controlled with mometasone only. Although there is strong circumstantial evidence of a relationship in this patient, Weller et al⁷ showed in an extensive summary that no evidence exists to support the causation of CSV by leukotriene receptor antagonists. As cases continue to be reported, there should be further investigation to determine whether a true relationship exists

References

1. Guillevin L, Cohen P, Gayraud M, Lhote F, Jarrousse B, Casassus P. Churg-Strauss syndrome: clinical study and long-term follow-up of 96 patients. *Medicine* 1999;78:26–37. [PubMed: 9990352]
2. Wechsler ME, Finn D, Gunawardena D, et al. Churg-Strauss syndrome in patients receiving montelukast as treatment for asthma. *Chest* 2000;117:708–713. [PubMed: 10712995]
3. Lofdahl C, Reiss T, Leff J, et al. Randomised, placebo controlled trial of effect of a leukotriene receptor antagonist, montelukast, on tapering inhaled corticosteroids in asthmatic patients. *BMJ* 1999;319:87–90. [PubMed: 10398629]
4. Sabio JM, Jimenez-Alonso J, Gonzalez-Crespo F. More about Churg-Strauss syndrome and montelukast treatment. *Chest* 2001;120:2116. [PubMed: 11742954]
5. Villena V, Hidalgo R, Sotelo MT, Martin-Escribano P. Montelukast and Churg Strauss syndrome [letter]. *Eur Respir J* 2000;15:626. [PubMed: 10759464]
6. Solans R, Bosch J, Selva A, Orriols R, Vilardell M. Montelukast and Churg Strauss syndrome. *Thorax* 2002;57:183–185. [PubMed: 11828052]
7. Weller P, Plaut M, Taggart V, Trontell A. The relationship of asthma therapy and Churg-Strauss syndrome: NIH workshop summary report. *J Allergy Clin Immunol* 2001;108:175–183. [PubMed: 11496231]

Figure 1.
Perivascular eosinophils and granuloma formation in a skin