
Correspondence

CHURG-STRAUSS SYNDROME IN A 7-YEAR-OLD RECEIVING MONTELUKAST AND INHALED CORTICOSTEROIDS

To the Editor:

Churg-Strauss syndrome (CSS) is a rare disease characterized by asthma, blood and tissue eosinophilia, and vasculitis. It is usually seen in adults and is extremely rare in children. Possible associations between leukotriene antagonists and the development of CSS have been reported in adults,¹⁻⁴ but not in children.

A 7-year-old female with a 2-year history of asthma was maintained on a moderate dose of inhaled corticosteroids for 18 months, with no recent dose reduction and standard doses of montelukast for 15 months. She presented with a 1-week history of nonproductive cough. Physical examination was unremarkable. Her peripheral white count was 11,800/mm³ with 10% eosinophils. A chest radiograph demonstrated a new left upper lobe cavitary lesion, and a chest computed tomograph (CT) revealed a left upper lobe multilobulated cavitary mass with a left lower lobe nodular density. Bronchoalveolar lavage fluid contained 45% neutrophils, 15% eosinophils, 25% macrophages, and Charcot-Leyden crystals. Sputum cultures grew *Moraxella catarrhalis*, and she was discharged on amoxicillin/clavulanate. After 3 weeks she still had persistent productive cough and pleuritic pain. Repeat chest radiograph and chest CT showed new consolidation throughout the lung parenchyma with an increased size of the cavitary lesion. White cell count had increased to 12,300/mm³ with 19% eosinophils. Thoracoscopic biopsy of the lesion revealed nonnecrotizing vasculitis with an eosinophilic infiltrate. Mucosal thickening of paranasal sinuses was seen on CT, but there was no evidence of other organ involvement. Antineutrophil cytoplasm antibodies were negative. These clinicopathologic findings fulfilled the diagnostic criteria for CSS⁵ and methylprednisolone (2 mg/kg daily) was started with rapid improvement in symptoms and healing of the lung lesions.

This is the first reported case of a child developing CSS while receiving a leukotriene antagonist. Although mechanistic links between the use of leukotriene antagonists and CSS have not been established, recent reports of an association in adults have led to much debate.¹⁻⁴ One view is that the association between leukotriene antagonists and CSS is attributable to an unmasking of CSS after reduction in steroid dose that occurs coincidentally with the introduction of a leukotriene antagonist. It is also conceivable that leukotriene antagonists played a more causal role in the development of CSS in our patient, especially given the fact that there had been no reduction in corticosteroid dose. Another potential interpretation is that the 15-month time lag between the

initiation of montelukast therapy and the appearance of CSS in this case reduces the likelihood of a causative role for the leukotriene antagonist.

Although it is not possible to determine the cause from a single case, the increasingly widespread use of montelukast in children and the seriousness of CSS demand ongoing vigilance and further investigation.

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DOES STACHYBOTRYS ACTUALLY CAUSE ADVERSE EFFECTS?

To the Editor:

Barnes et al¹ should be commended for their ongoing investigations into *Stachybotrys*. It is noteworthy, however, that they report levels of exposure and serologic sensitivity to *Stachybotrys* not found by other investigators.

Barnes et al state that 30% of the homes they have tested have evidence of *Stachybotrys*. Several extensive reviews of the medical literature on *Stachybotrys*, including two recently published in the *Annals*, have concluded that there is minimal exposure to *Stachybotrys* spores in the environment.^{2,3} *Stachybotrys* spores are rarely found in outdoor air and only in indoor air if there is significant water damage and visible mold growth. Even under those conditions, the level of exposure in undisturbed air is minor. Barnes et al report that 9% of healthy individuals demonstrated *Stachybotrys*-specific immunoglobulin (Ig)E. In contrast, other investigators have not been able to find any *Stachybotrys*-specific IgE in either

exposed or control individuals.⁴ Barnes et al do not present an explanation for the disparity between their data and previous published studies.

Barnes et al report that 49% of normal sera tested demonstrated IgG antibodies against *Stachybotrys*. It is unclear why the IgG or IgE binding of each of the 15 atopic individuals included in the study with known or presumed *Stachybotrys* exposure was not reported. It has been demonstrated by other investigators that *Stachybotrys* antigens cross-react with other fungal antigens.^{4,5} Barnes et al do acknowledge this fact. They also report that those subjects with known or presumed *Stachybotrys* exposure were also exposed to several other molds. Consequently, the significance of the authors' *Stachybotrys*-specific serologic findings is difficult to interpret. Additional studies using more rigorous controls are required to determine the validity of *Stachybotrys* serologies.

Barnes et al theorize that allergists have avoided testing for *Stachybotrys* because of its "toxic reputation." A more likely explanation is that *Stachybotrys* has not been demonstrated to be a proven cause of allergic disease. At this time, readers of the investigation by Barnes et al must remember that the demonstration of *Stachybotrys*-specific antibodies is not sufficient evidence to prove exposure to or adverse health effects from *Stachybotrys*.

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Response:

Dr. Musmand's letter brings to the forefront several points concerning the recent *Stachybotrys* article¹ that we would like to amplify, and one point that we think needs additional explanation and understanding.

First, publications by Terr and Burge^{2,3} are concerned with airborne *Stachybotrys* spores in all homes and buildings. Our results were determined in a subset of homes that required inspection. The most common reason that homes required inspection was a physician's suspicion that there were conditions in the home that contributed to respiratory problems.⁴ The proper conclusion to draw from our data is that 30% of

homes with suspected fungal problems contain *Stachybotrys*.⁵ The conclusion that 30% of all homes contain *Stachybotrys* is not correct and we do not support it. The take home message is: when inspecting a home with suspected fungal problems and inhabitants with respiratory-related health complaints the possibility of a *Stachybotrys* presence should be investigated.

Second, the suggestions that there are no persons who produce IgE specific for *Stachybotrys* proteins and that there are proteins that cross-react between *Stachybotrys* and other common fungi seem to be contradictory. We are of the opinion that there are significant cross-reacting proteins (although we did not specifically identify them). Fungal cross-reactivity is common and the subject of numerous recent articles.^{6,7} Therefore, it is only logical that there is a set of atopic individuals who produce IgE directed against *Stachybotrys* proteins. The figure of 9% we presented is in line with the reported percentage of individuals who produce IgE specific for other fungi in very large epidemiologic studies.⁸

The 15 atopic individuals with known or suspected *Stachybotrys* exposure mentioned in our manuscript were part of a serum pool used for the immunoblotting experiments. These sera were individually tested for the presence of *Stachybotrys* specific IgE and all were positive. They were collected from known atopic individuals, and some, but not all of these individuals, lived in homes where *Stachybotrys* spores were found. As all of these individuals were known to be atopic, they were not included in the set of sera deemed to be representative of the general population.

Dr. Musmand's statement that "the demonstration of *Stachybotrys*-specific antibodies is not sufficient evidence to prove exposure to or adverse health effects from *Stachybotrys*" is very correct. The use of tests that demonstrate the presence of IgE directed against *Stachybotrys* proteins should not be for the positive identification of *Stachybotrys* exposure. These tests (which are now on the ImmunoCap instrument⁹) can be used by allergists to determine the specific sensitivities of their patients. Whether or not *Stachybotrys* allergy will become a proven cause of allergic disease must await further experimentation.

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