tions for cases with high risk of food allergy after solid organ transplantation involve dietary manipulations —elimination diet and replacement of tacrolimus by cyclosporine[5]. In this particular case we suggested cyclosporine therapy and a rigorous elimination diet with avoidance of all poultry meat and Leguminosae. The patient had no complications and has been asymptomatic during one year of follow-up.

We describe a rare case of an adult with allergic rhinitis who had serious allergic reactions to various beans and poultry (chicken and turkey). The complexity was increased due to the need for immune suppression for liver transplantation.

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## Allergic Rhinitis and Childhood Sleep Disordered Breathing

*To The Editor:*

Paediatric allergic rhinitis is one of the most common chronic illnesses of childhood. It is typically characterized by sneezing, pruritis, rhinorrhea and congestion. Even mild allergic rhinitis impacts all aspects of sleep, most prominently when uncontrolled. This case illustrates that uncontrolled allergic rhinitis can result in insomnia in a school age child.

*Case Report*: The patient is a 10 year old Hispanic male with a history of allergic rhinitis (AR) and specific IgE responses to grass, trees and dust mites documented by skin testing. He was well controlled with daily montelukast, and as needed, cetirizine and inhaled nasal corticosteroids. Currently, his mother stopped the montelukast and other medications, after hearing a news report that there were behavioural side effects associated with the montelukast. At the time she stopped the medications, there were no symptoms, changes in sleep or behaviour.

One month later, his sleep pattern dramatically changed. His sleep latency changed from ten minutes to two hours according to his history. Once asleep, he had two to three nocturnal awakenings. There was no associated snoring, nightmares, night terrors or daytime somnolence. His mother denied any changes in social, school or family history. He does not drink caffeinated beverages and has had no recent illness. His current symptoms also include frequent rhinitis, congestion and itchy eyes.

*Environmental history:* They have no pets or smokers at home. The family uses dust avoidance measures.

His past medical history is notable for normal spirometry, removal of tonsils and adenoids, for habitual snoring and enlarged tonsils in 2006. One nasal polyp was removed at the same time. No sleep study was performed. At the age of 15 months, he had one episode of cold symptoms and wheezing, which was relieved with albuterol. *Family Medical History:* notable for asthma in one parent. *Review of Systems:* He participates in soccer without dyspnoea or cough. His school performance is very good and has not changed since being off montelukast treatment. Notable findings on physical examination include a body mass index of 19. His ear, nose and throat exam revealed boggy pale nasal turbinates and clear nasal discharge. The remainder of his exam was normal. The patient was restarted on inhaled nasal corticosteroids and a second generation antihistamine with complete resolution of his symptoms.

Allergic Rhinitis is one of the most common chronic conditions among children. The disease is associated with both mechanical and inflammatory molecular mechanisms of sleep disordered breathing (SDB).[1] The case report illustrates that while the treatment of AR can contribute to SDB, the lack of treatment also can cause SDB.

Inflammatory cytokines are released as part of the allergic response, and in turn have been associated with suppression of both rapid eye movement (REM) and non-REM sleep. In particular, IL-1, IL-4 and SP can cause increased latency to REM.[2] Nasal challenges with Substance P can increase nasal airway resistance and latency to REM.[3] The patient described was well controlled with montelukast, a leukotriene antagonist. Leukotrienes as key allergic mediators increase vascular permeability, mucus secretion and nasal obstruction. Nasal congestion is directly linked to sleep quality. Nasal congestion caused a 1.8 fold increase in moderate to severe sleep-disordered breathing compared to subjects without this symptom. The peak congestive hours are in the early morning, correlating with enhanced effect on sleep. In studies, mean nasal congestion peaked at 5:00 AM and was associated with a 20% increase in overall symptom intensity.[4]

One month after discontinuation of the montelukast, the patient developed symptoms of SDB. Post-marketing reports of behavioural and sleep disturbances among patients treated with montelukast prompted the parent to discontinue the drug. The published safety and tolerability data in children though, are quite favourable compared to placebo.[5] A recent analysis of the use of montelukast showed that montelukast is effective in the treatment of allergic rhinitis, in comparison to placebo, but less effective than local application of corticosteroids.[6] The clinician must balance the potential sleep related adverse side effects of anti-allergy medications, with the symptom control of allergic rhinitis to avoid SDB in this common paediatric disease.

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