

# Strep Throat Can Cause Anorexia Nervosa, OCD

*Rarely, group A  $\beta$ -hemolytic streptococcal infection can lead to sudden onset of psychiatric symptoms.*

BY KATE JOHNSON  
Montreal Bureau

MONTREAL — Streptococcal pharyngitis may be a very occasional trigger for anorexia nervosa and other neuropsychiatric conditions and should be investigated in patients with sudden onset of psychiatric symptoms, Mae S. Sokol, M.D., said at an international conference sponsored by the Academy for Eating Disorders.

Identification of this cause of anorexia nervosa would not change treatment of the condition (although this possibility is being investigated), but it would alert patients and physicians to the need for more aggressive prevention and treatment of future strep infections, said Dr. Sokol of Creighton University in Omaha, Neb.

Dr. Sokol explained that group A  $\beta$ -hemolytic streptococci (GABHS) have been linked with several illnesses known collectively as PANDAS (pediatric autoimmune neuropsychiatric disorder associated with streptococcus).

In addition to anorexia, the PANDAS classification includes obsessive-compulsive disorder (OCD) and tic disorders such as Tourette's syndrome.

It is well recognized that rheumatic fever and Sydenham's chorea are streptococcus-triggered autoimmune attacks on cardiac cells and cerebral neurons, respectively. It also is believed that PANDAS might be caused by similar attacks on basal ganglia cells, noted Dr. Sokol, who is also director of the eating disorders program at Children's Hospital in Omaha.

"We hypothesize that the immune system may look at the basal ganglia cells in the brain and mistakenly attack those cells, which may cause patients to have abnormal thoughts about food and weight," she said in an interview at the conference.

Why this damage to basal ganglia cells

manifests sometimes as anorexia and other times as OCD, Tourette's, or infantile autism is not known, she said.

"Since the basal ganglia are also involved with emotion, we think this area of the brain may be affected slightly differently with each condition. Another theory is that maybe we are seeing the same thing in children with PANDAS anorexia and children with PANDAS OCD—only in the PANDAS anorexia, the obsessions are about food and weight, whereas in PANDAS OCD they are about other things.

What's common in all these patients is a sense of perfectionism after they be-

come ill," Dr. Sokol explained.

She presented her study of 21 children and adolescents with possible PANDAS anorexia. The subjects met some or all of the following criteria:

- ▶ Presence of anorexia meeting DSM-IV criteria.
- ▶ Prepubertal onset of anorexia. This was present in 10 of the 21 participants.

Participants ranged in age from 10.5 to 18 years at enrollment, with symptom onset at 9.7 to 16 years.

▶ Acute onset/exacerbation of their anorexia symptoms. This occurred in 19 of the 21 participants.

▶ Association with GABHS infection: anorexia onset or exacerbation within 1 day to 6 months of strep infection. This occurred in all participants.

▶ Increased psychiatric symptoms, not exclusively during the strep illness. This was present in all participants.

▶ Concomitant neurologic abnormalities, such as choreiform movements, motor hyperactivity, or adventitious movements. This occurred in only two participants but has been reported more frequently in PANDAS OCD.

Dr. Sokol said physicians who suspect PANDAS anorexia should make an effort to confirm laboratory strep tests, although at this stage treatment recommendations would be no different for this group.

However, identification of an infection-induced anorexia could trigger use of prophylactic antibiotics (which is still under investigation) and to the importance of influenza vaccination, which can decrease vulnerability to strep, she said. ■

**The immune system may attack the brain's basal ganglia cells, perhaps leaving the patient with abnormal thoughts about food and weight.**

## Tachycardia in an Athlete With a Cold May Portend Myocarditis

BY TIMOTHY F. KIRN  
Sacramento Bureau

KEYSTONE, COLO. — The rules are simple and straightforward about when a physician should allow an athlete with an upper respiratory tract infection to return to play.

It is the clinical evaluation that is not always so easy, said Lisa R. Callahan, M.D., at the annual meeting of the American Orthopedic Society for Sports Medicine.

The general rule is that when athletes have symptoms only above the neck, such as nasal congestion or a sore throat, they can participate, but only at 50% normal intensity, said Dr. Callahan, the medical director of the Women's Sports Medicine Center at the Hospital for Special Surgery, New York.

If symptoms are below the neck, such as myalgias, shortness of breath, or vomiting, the athlete should not participate.

But the real concern is myocarditis, which can arise with a number of viral, bacterial, and fungal infections. And, much of the time, this kind of myocarditis is going to have very vague clinical signs and symptoms, Dr. Callahan said.

Most individuals with myocarditis associated with an infection will make a complete recovery. But it is estimated that infection-related myocarditis may be the cause of 20% of fatal arrhythmias in athletes.

The most important sign to evaluate when looking for myocarditis in an athlete is tachycardia, remembering that many athletes will normally have a low resting heart rate, and possibly also tachypnea, Dr. Callahan said.

Other general symptoms of myocarditis include fatigue, fluid retention, palpitations, and fever. Patients may have normal laboratory val-

ues or may have an elevated white blood cell count or erythrocyte sedimentation rate. Chest x-ray and ECG may be normal in some cases.

The list of infectious agents known to be associated with myocarditis is long, but examples include cytomegalovirus; Coxsackie, influenza, and Epstein-Barr viruses; salmonella, staphylococcus, streptococcus, and clostridia; and Candida and histoplasmosis.

Myocarditis can have two stages: the infectious stage, lasting 7-14 days, when the virus directly kills myocytes; and, sometimes, an immune response stage, which occurs later and can have a variable duration.

Physicians concerned about myocarditis should be alert for its other specific signs, such as chest pain, new onset of exertion-associated dyspnea, or changes in heart rate or blood pressure. Prolonged fatigue and low-grade fever are also signs of myocarditis.

According to guidelines from the American College of Cardiology, an athlete who has had myocarditis should have two echocardiograms, one at 3 months and one at 6 months, before returning to sports participation.

The American Academy of Pediatrics suggests that an athlete with a fever should be disqualified from exercise, as fever increases cardiac demand in a number of ways, Dr. Callahan noted.

In general, exercise has been shown definitively to improve immune function. However, very strenuous activity, such as that engaged in by marathoners, can suppress neutrophil function and curb natural killer cells.

Athletes tend to have a high caloric demand, due to a high metabolism, and fever also increases caloric demand, so athletes with a fever should be encouraged to eat, she said. ■

## Pet and Wild Rodents Pose Risk to Pregnant Women

BY HEIDI SPLETE  
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Observing good hygiene practices and environmental modifications can reduce the risk of infection from lymphocytic choriomeningitis virus from rodents, both pet and wild, the Centers for Disease Control and Prevention has advised.

Lymphocytic choriomeningitis virus (LCMV) has been shown to transfer from rodents to humans, but not from person to person. Symptoms of LCMV are flulike, including stiff neck, fever, muscle aches, and nausea. (MMWR 2005;54:747-9).

Most LCMV infections do not cause serious illness, although pregnant women may be at an increased risk. Pregnant women who discover wild mice or other rodents in their homes should leave the capture and removal of the animals to others. They should also avoid spending long periods of time in the same room as a pet rodent and should not clean the cage or feed the animal. If possible, pregnant women should arrange for a friend or relative to adopt the rodent during their pregnancy.

Although the risk for LCMV is low, transmission of infection from mother to fetus has been reported, and infection during the first or second trimester can cause develop-

mental problems in the fetus, according to the CDC.

The prevalence of LCMV in pet rodents is not known; it is found in hamsters, guinea pigs, and pet mice that have come into contact with infected wild rodents at pet stores, breeders, or homes.

Anyone who handles pet rodents should follow the care practices below to reduce their risk for infection:

▶ Wash hands with soap and water or a hand sanitizer after handling pet rodents or cleaning areas where they have been.

▶ Keep cages clean and change soiled bedding.

▶ Clean cages outside or in a well-ventilated area.

▶ Supervise young children while they clean cages or handle rodents and ensure that children wash their hands afterward.

▶ Never kiss rodents or hold them close to the face.

▶ Never allow pet rodents to come into contact with wild rodents, or wild rodent nests or droppings, and never release pet rodents into the wild.

▶ Keep rodent cages and food supplies covered.

▶ Always supervise pet rodents when they are not in their cages.

For additional information on how to purchase healthy pet rodents, and then keep them healthy, visit [www.cdc.gov/healthypets/lcmv\\_rodents.htm](http://www.cdc.gov/healthypets/lcmv_rodents.htm). ■