

## Special Interest Articles:

- Fibromyalgia
- Diet and ADHD
- Autism
- Can antacids cause gastritis
- Child development
- Catching cold may be a good thing
- Salmonella and arthritis

## Autoimmunity and Autism

Research appearing in the April, 2002 issue of the journal *Molecular Psychiatry* (volume 7, number 4, pages 375-382) studied autistic children who had a form of the disease characterized by apparently normal early development followed by regression in the second year of life. Previous studies have found evidence of immune issues in this group of autistic patients. Earlier research has shown that in this group of patients, bowel inflammation is

often an issue [*The Lancet* (1998; 351: 637-641), *American Journal of Gastroenterology* (2000; 95: 2285-2295)]. In this study, the researchers found changes in the cells in the intestine of the autistic patients that suggest that the immune system was reacting against the intestinal cells. The authors made comparisons to children with mental retardation, cerebral palsy, celiac disease and normal controls, none of whom had these cellular changes.

## One Way to Improve Muscle Function

Amino acid supplementation may be one way to improve muscle function and exercise endurance in the elderly, according to research appearing in the *American Journal of Cardiology* (Volume 101, Issue 11, Supplement 1, 2 June 2008, Pages S104-S110). The subjects of the randomized, double-blind, placebo-controlled study were 95 senior citizens (aged 65-74) with chronic heart failure. Subjects were given either a placebo or 4 g of a mixed amino acid supplement twice each day. An exercise test was given at the beginning of the study and after 30 days of supplementation. The group receiving the amino acids had a

significant improvement in exercise capacity and in peripheral oxygen availability.

Another pilot study appearing in the *American Journal of Cardiology* (Volume 101, Issue 11, Supplement 1, 2 June 2008, Pages S78-S81), showed the value of amino acid supplementation in elderly patients with chronic heart failure. The subjects took 4 g of a mixed amino acid supplement for 12 weeks. Prior to supplementation the subjects were able to walk an average of 201 meters in six minutes. After 12 weeks of supplementation, the average distance walked increased to 226 meters.

## One Easy Way to Improve Fibromyalgia

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About 90% of fibromyalgia sufferers are women. Published in the *Annals of Rheumatic Disease* (2001; 60: 21-26) was a small study, involving 21 women. Eleven went through a strength training program, 10 received no special care. After a 21-week strength training program, women with fibromyalgia experienced a reduction in their levels of depression and fatigue. Their pain levels, however, did not change. In another study, published in the *British Medical Journal* (Volume 325, Number 7357, Issue of 27 Jul 2002), point-tenderness did improve with exercise.

The British study, involving 130 fibromyalgia patients, had the subjects performing either

progressive aerobic exercise (on a treadmill or stationary bike), or relaxation and stretching. Researchers found that subjects performing exercise were twice as likely to rate themselves as much better or very much better, as compared to those who did flexibility training and relaxation techniques. The benefits of the exercise were sustained when patients were checked at a one-year follow up. Patients in the exercise group also showed larger reductions in terms of the number of tender points. Tender points, or "trigger points," are locations on patients that produce a sharp pain if pushed on during an examination.

## Diet and ADHD

Research appearing in the journal, *Annals of Allergy*, May 1994 evaluated 26 children with ADHD. The children were put on an allergy elimination diet. Along with eliminating artificial colors and preservatives, select foods were eliminated. These included common allergens like wheat, dairy products, egg, corn, yeast, soy, citrus, chocolate and peanuts. Of the 26 subjects, 19 responded well to the diet. The 19 all reacted to various foods or chemicals when challenged (remove allergic substances

for a period of time and then reintroduce them to see if the child reacts).

The researchers tried a placebo-controlled food challenge in 16 of the children. All 16 did better on the days they took the placebo. The authors suggest that eliminating artificial colors and other chemicals, along with a hypoallergenic diet may be beneficial to some ADHD patients. Diet may play an important role in the cause and treatment of ADHD.

## Why is There So Much Autism?

According to the US Department of Education, autism is increasing at a rate between 10% and 17% per year. In the decade between 1992 and 2002 the number of cases of autism in the United States increased by over 700%. These numbers are alarming, especially considering that autism basically did not exist before 1940.

Something is assaulting the nervous systems of our children, and it didn't exist (or was a minor influence) before 1940. Here are some possibilities:

**Vaccinations:** This is an extremely controversial topic. We are told that studies prove that vaccines do not cause autism. Actually the study that needs to take place has never been performed. We need to look at the health of a large group of people who have never been vaccinated and compare it to a large group who has gotten all of the required vaccines. Count the cases of autism in both groups (and while you are at it, count the cases of ADHD, MS, crib death, and autoimmune diseases). Until we actually compare the health of people who have been vaccinated to the health of people who have not been vaccinated, we can't really say whether or not vaccines are harmful.

**Antibiotics:** Prior to 1940 there was no widespread use of antibiotics. By the end of World War II the US was producing 80 tons of antibiotics each year. By 1990 we were producing 20,000 tons per year. About 1/3 of all pediatrician visits are for ear infections (treated with antibiotics). Antibiotics are also in the food supply; they are

fed to animals to fatten them up. Candida, dysbiosis, and food allergy may result from overuse.

**The environment:** There are 75,000 chemicals produced in the US every year; 3,000 of which are produced in amounts greater than 50,000 tons. The average American has over 116 synthetic compounds stored in his or her body (according to the CDC). Many of these things are neurotoxins; insecticides work by attacking the insect's nervous system.

**Heavy metals:** Mercury amalgams came into widespread use in 1927 (a child in 1927 would be of childbearing age in 1940). Mercury is also used as a preservative in vaccines. Cadmium is in cigarette smoke. Lead was in gasoline until the 1970s. All heavy metals are neurotoxins.

**Nutrition:** The use of food additives, hydrogenated oils and refined foods steadily increased through the 20th century. Sugar consumption increased and the amount of vitamins and minerals in the average diet decreased. Also, sensitivity to regularly eaten foods is increasing.

It turns out that the health care professionals who are actually getting results with autistic patients are looking at it as a multi-faceted attack on the nervous system. Testing for these issues and addressing them nutritionally can produce gratifying results.

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## Can Antacids Actually Cause Gastritis?

A study performed at the Howard Hughes Medical Institute (University of Michigan) shows that acid suppressing medications (proton pump inhibitors, like Prilosec and Prevacid) may actually aggravate the conditions that they are designed to treat. The stomachs of mice treated with these drugs developed more inflammatory changes and had greater bacterial infestation than those who were not treated (when the researchers treated normal mice with the proton pump inhibitor omeprazole for two months, they noticed that these mice also developed stomach inflammation that was due to bacterial overgrowth).

Bacteria cause an inflammatory response in the stomach, which in turn causes the over production of hydrochloric acid. The bacterial infestation causes the production of chemicals called cytokines. These cytokines causes the production of a hormone, called gastrin. The acid producing cells of the stomach, called parietal cells, produce hydrochloric acid in response to the gastrin production. The acid production is the body's defense mechanism designed to kill the invading microbes. Interfering with acid production by using omeprazole interferes with the body's defense against these bacteria.

The researchers compared responses in normal mice with mice genetically unable to produce gastrin. When treated with the antacid drugs, both groups of mice showed increased inflammatory changes and increased bacteria. Antibiotic treatment resolved gastritis in mice being treated with antacid medication. Low hydrochloric acid and increased inflammation caused increases in G-cells (cells that produce gastrin) and in parietal cells (cells that produce hydrochloric acid). This elevation in the number of G-cells and parietal cells correlated with inflammation, and not with

stomach acidity.

Researcher Juanita L. Merchant is quoted as saying, "In treating patients with gastrointestinal disorders, physicians usually aim to increase the pH of the stomach, particularly in patients who are in the intensive care unit, to try to protect their stomach linings from ulceration -- which physicians initially believed was due only to stomach acid. There is also the dogma that most ulcers are due to infections by *Helicobacter*. But one important take-home point from our papers is that you don't want to block acid secretion over the long term just to treat either the bacterial overgrowth or the *Helicobacter* infection, because that's going to potentially create other problems."

Interestingly, the increase in acid does not inhibit *Helicobacter pylori*. A low-acid environment will inhibit *Helicobacter*, which has been linked to gastritis, ulcers and cancer. The interest in suppressing acid is born of the idea that to do so is necessary to suppress *Helicobacter*. The researchers point out that other bacteria can also cause gastritis and cancer. "In general, the medical community needs to think more broadly about chronic infections in the stomach, colon, bladder and liver, because inflammation in all of these organs can lead to cancer," Merchant said. "*Helicobacter* has quite correctly been labeled as a significant carcinogen, but our papers emphasize that other organisms can also cause chronic gastritis that may ultimately lead to cancer." The research appears in the January 2002 issues of *Gastroenterology and the American Journal of Physiology -- Gastrointestinal and Liver Physiology*.

## Antioxidants, Fatty Acids and Child Development

Research appearing in the journal *Early Human Development* (Volume 85, Issue 7, July 2009, Pages 421-427) links the levels of antioxidant vitamins in newborns to improved development. Researchers measured levels of vitamins A, C and E in maternal blood and in the blood of the umbilical cord at the time of delivery in 150 sets of mothers and newborns. At age two, the children were evaluated using the Gesell Development Schedules. Children with higher levels of vitamin E at birth had better motor development, as well as language and social skills. Vitamin A levels also had a positive effect on motor development.

Damage from lipid peroxidation can be linked to many complications in the newborn, and is especially problematic in

premature babies. Research appearing in the *Archives of Medical Research* (Volume 33, Issue 3, May-June 2002, Pages 276-280) found that preterm infants have lower levels of vitamins A and E than term babies.

The type of fats and oils consumed by children is also important. DHA is an omega-3 fatty acid found in fish oil. It is important for brain development in children. A recent study, published in *Clinical Pediatrics* (2008 May;47(4):355-62) looked at 175 healthy four-year-olds who were supplemented with 400 mg per day of DHA or a placebo. Prior to supplementation and after four months of supplementation, the children were given four tests of cognitive function.

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## Catching a Cold may not be all Bad

According to the *British Medical Journal*, (February 17, 2001; 322: 390-395) it is a good thing when a baby gets a cold. Colds and minor infections seem to help the immune system to develop and help to prevent asthma and allergies later in life. The finding supports a theory that an immune system that has been geared up to fight infection is less likely to overreact to innocuous substances.

While repeated mild infections seemed to help prevent asthma and allergies, recurrent serious infections were another matter. Serious infections of the lower

respiratory tract, like pneumonia or the flu, seemed to increase asthma risk. The researchers point out that the children who have a tendency to get asthma may be more prone to these more serious infections.

Other research has found that children living on farms or with pets are less likely to get asthma or allergies. All of this research supports the idea that environments that are too sterile may not allow the immune systems to develop properly and causing them to overreact to harmless substances.

## Is There A link Between Salmonella and Arthritis?

"Money cannot buy health, but I'd settle for a diamond-studded wheelchair."—  
Dorothy Parker

Research that was performed at Johns Hopkins and published in the February 2002 issue of *Nature Medicine*, revealed a connection between certain bacterial infections and autoimmune disease. If normal cells carry a specific protein that mimics the bacterial protein, they may be attacked by the immune system.

If there has been a bacterial infection, cells that have been infected by the bacteria display some of the bacteria's protein. It is a way to signal the immune system that the cell is sick and needs to be dealt with. They have a protein marker that triggers the immune system into action.

However, immune cells can attack cells that bacteria have never infected and should be left alone. This especially occurs when the cells are stressed by exposure to irradiation, environmental toxins or the body's stress chemicals. The scientists first identified the protein marker in mouse cells infected with Salmonella as one common to certain bacteria associated with human arthritis. But they also found that the bacterial marker was almost identical to parts of a

molecule found in humans, mice and all living organisms.

In a normal Salmonella infection in mice, at least half of the immune cells are stirred up to recognize the mouse's own protein as well as the bacterial one. When researchers artificially caused the mouse body cells to mimic the Salmonella protein, the mouse immune cells would readily attack them. The immune cells also went into attack mode if the cells displayed a piece of the mouse's own molecule (the one similar to that of the bacteria) or the identical human version. In other words, the immune system can be triggered by a mimic, even if that mimic is part of the host's own body. An autoimmune response is created.

Mark Soloski, Ph.D, who led the research team said that the amount of those who get Salmonella can be as high as 10%. He said that they develop a reactive kind of arthritis lasting a few weeks. He also said that a smaller, significant number of those patients get a severe, debilitating type of arthritis that is long-lasting.

