Aspirin Desensitization Risks and Benefits of the Procedure

Approximately 15 percent of all asthma patients and 40% of asthmatics with nasal polyps and sinusitis are allergic to aspirin and nonsteroidal anti-inflammatory drugs (NSAIDs). Research has been performed at Scripps Clinic and Research Foundation since 1979 on aspirin hypersensitivity. Aspirin-Exacerbated Respiratory Disease consists of asthma, nasal and sinus polyps and a respiratory sensitivity to aspirin and non-steroidal anti-inflammatory drugs. Patients with this syndrome, often referred to as aspirin triad or Samter’s triad, have progressive inflammatory disease of the upper and lower respiratory tracts. This disease is often difficult to control and often requires multiple sinus operations and oral corticosteroids. In 1979, researchers at Scripps found that desensitizing Aspirin-Exacerbated Respiratory Disease (AERD) patients in order for them to be able to take aspirin or an NSAID drug for other conditions resulted in improvement in their upper and lower respiratory tract inflammation. The goal of aspirin desensitization is to follow it with long-term aspirin treatment, which has been shown now in several case series (involving over one thousand patients) to be effective at reducing upper and lower respiratory inflammation; thereby reducing oral corticosteroid requirements and the number of sinus surgeries as well as the number of sinus infections. Hospital visits for asthma and sense of smell were also generally improved in most patients.

During the aspirin desensitization, you will be challenged with small doses of aspirin, usually starting with approximately one-tenth of the therapeutic dose so as to minimize the risk of a serious reaction. Doses will be gradually escalated depending on your tolerance. Once a reaction occurs, this will likely be no greater than the reaction you experienced previously when you took a full therapeutic dose. It is often less severe. The major risk of this procedure is a severe asthma attack. Other symptoms that you may experience include severe nasal congestion, profuse runny nose, tightness of the throat, flushing of the skin, hives, and rarely drops in blood pressure or changes in cardiac status.

During this procedure, Dr. Bosso and the nursing staff will do everything possible to prevent a severe asthma attack from occurring. Your asthma will be under good control prior to starting this procedure, as we established as an outpatient prior to the procedure, your breathing was measured and felt to be stable. An intravenous catheter will be placed in your vein so that we can quickly give you medicine if needed. The challenges will start with very small doses of aspirin. You will be observed carefully for any reaction after each dose. An expiratory flow measurement of your large airways function will be performed frequently, and if you were to experience any respiratory symptoms. If and when a reaction occurs, the challenge will be stopped and your symptoms will be treated with one or more inhalation treatments to relieve wheezing and chest tightness. Emergency equipment and the intensive care unit are nearby. The Anesthesia Department is aware of the procedure being performed, and is on standby.
Very rarely severe asthma attacks need to be treated with a tube placed into the windpipe, and a machine breathing for the patient. This has not occurred in over 800 patients studied at Scripps Clinic, but you should know that we are prepared to treat emergencies.

Approximately five to ten percent of patients will develop skin welts or hives, which are treated with antihistamines. Swellings are only dangerous if they block off your throat. If you develop wheezing in your vocal cords, the nurses will give you a special medicine to inhale. If that does not work, a tube may be placed in your windpipe for a short time.

If you develop stomach pain, you will be treated with oral medicine or medicine given through a tube in your vein. About one in ten people get stomach pains from the release of histamine into the gut, which happens in allergic reactions. The pain goes away as the aspirin desensitization is completed.

Drops in blood pressure are extremely rare (<1%). This is also caused by the release of histamine, this time into the blood stream from the lungs. All patients who experienced this were treated with medicine and quickly returned to normal.

Following an as aspirin-induced reaction and successful rescue treatment, and after your condition is stabilized, further doses of aspirin will be given, starting with the dose which you reacted to. The general experience with this procedure is that the reaction to the same dose the second time it is administered will result in either no reaction or a much less severe reaction. Doses will continue to be escalated slowly through the procedure over a period of two days until at least 325 or 650 mg of aspirin is achieved. After desensitization, you will be discharged on a regimen of 325 or 650 mg of aspirin twice daily depending on your individual case.

Long-term risks from aspirin include pain or bleeding of the stomach or stomach ulcers. It may also cause hives. Aspirin slows down blood clotting, so you may bleed longer if you cut yourself or have surgery. Once you are desensitized to aspirin the risks of daily aspirin are small. If you take it with food, stomach problems are less likely. Taking an antacid, such as Maalox or Mylanta can lessen stomach pain. Coated aspirin tablets that bypass the stomach before they dissolve are also useful. There are other medicines that could be prescribed if needed. If you start bleeding anywhere in your body, you should stop taking aspirin.

If you are pregnant, it would not be a good idea to start the aspirin challenges. If you could potentially become pregnant, a reliable birth control method should be used.
Potential Benefits: Approximately 87 out of each 100 patients who have been desensitized to aspirin for more than a year have less nasal congestion, fewer nasal polyps and less sinusitis. Asthma symptoms are improved, and many patients need to take less prednisone. Many patients experience an improvement in their sense of smell.

Further information will be provided to you upon request. All of your questions will be answered prior to the procedure.

Aspirin Desensitization FAQ

What is Aspirin-Sensitive Asthma?

Allergy researchers know that 40 percent of asthmatic patients who have nasal polyps and sinusitis are also allergic to aspirin. Even though these people may once have been able to take aspirin, they now are unable to take it without causing a sudden asthma attack or other allergic symptoms. The aspirin sensitivity doesn’t explain the whole picture, however. Even while avoiding aspirin, these patients continue to have asthmatic symptoms, nasal congestion, formation of nasal polyps (growth of tissue) and repeated infections in the sinuses.

What is Aspirin Desensitization?

In 1979, researchers at Scripps Clinic began studying aspirin sensitivity in asthmatic patients. To their surprise (and due to astute observation), they noticed that with each successive dose of aspirin, the severity of the attacks lessened. In fact, after several small doses of aspirin, the allergic reaction disappeared all together. Under carefully controlled “challenges”, the patients were gradually able to take full adult-strength doses of aspirin (650mg). At this point, they were said to be “desensitized” to aspirin. Further more, some of these patients said they felt better. They could breath easier in both their noses and bronchial tubes and had a better sense of smell.

What is an Aspirin Challenge?

This “Challenge,” or test, to see if you are allergic to aspirin by giving you small test dose of aspirin in a capsule and then observing your symptoms. Patients react to different doses and may have different symptoms. In many cases, the first dose is too small for the aspirin-sensitive patient to react to, so increasing doses are used, waiting three hours between each doses.
Is it Safe?

Yes, if you have not had a prior aspirin challenge to determine your provoking doses, we start with a small dose of aspirin (30mg or less), as compared to 650mg of aspirin in two regular aspirin tablets. A nurse will be with you during the challenge. As soon as you begin to have symptoms, you will be given a treatment to quickly and effectively reverse the reaction.

What will my reaction be like?

The type and degree of each reaction varies from person to person. Because the dose is so small, your symptoms are likely to include some chest tightness, wheezing, stuffy nose, runny nose, and watery, itchy eyes. Rarely, you may have flushing, hives or stomach pains.

No two patients react the same way to the series of aspirin challenges. The degree of the reaction, the amount of aspirin to cause the reaction, the total number of reactions at each dosage is entirely individualized. Therefore, the progress of the desensitization will be carefully tailored to each individual. The decision to move to higher doses of aspirin and how long to wait between doses is determined at each step by your doctor and nurse.

Hospitalization

This two-day process will:
1. Determine whether you are indeed allergic to aspirin
2. Desensitize you to aspirin

You will be treated in our Ambulatory Care Center. You are responsible for transportation to and from the hospital. You will be discharged only if you are stable. Each person’s day and time of discharge is individualized.

We encourage no more than two visitors in the room at any time. We suggest no more than one person during an aspirin challenge.

A “saline lock” will be inserted in your arm the day your challenge begins. This is similar to an “I.V.” in that it provides access to the vein for emergency medicine if they need to be given; however, it is not connected to any fluid or tubing. You will be discharged on Day One with it intact. Your nurse will apply a protective dressing to the site.

What other tests will I have?

Peak Flow/FEV<sub>1</sub>: During your hospital stay, we will measure your peak expiratory flow/FEV<sub>1</sub> during the aspirin challenge and desensitization, by having you blow into a tube connected to a recording device. This allows us to carefully monitor your progress and objectively measure your response to each medication.
Oximetry: During your stay, you will be asked to have a device placed over your finger with a recording device (called an oximeter) to check the level of oxygen in your blood.

Blood Tests: If you are female between the ages of 12 and 50 or still menstruating, a small blood sample will be drawn before starting the procedure to see if you are pregnant.
Food and drug reactions and anaphylaxis

Long-term treatment with aspirin desensitization in asthmatic patients with aspirin-exacerbated respiratory disease

M. Pilar Berges-Gimeno, MD, Ronald A. Simon, MD, and Donald D. Stevenson, MD La Jolla, Calif

Background: Aspirin desensitization treatment is an option to decrease disease activity and reduce the need for systemic corticosteroids in patients with aspirin-exacerbated respiratory disease (AERD).

Objective: This study was designed to determine whether the clinical courses of patients with AERD improved as early as 6 months after starting aspirin desensitization and to compare this with follow-up evaluations after at least 1 year.

Methods: Between 1995 and 2000, 172 patients with AERD were admitted to our General Clinical Research Center, were desensitized to and treated with aspirin, were discharged to their home communities, and participated in follow-up interviews and written assessments of their clinical courses.

Results: In the first 6 months of aspirin treatment, there were significant reductions in sinus infections and numbers of short courses of prednisone and improvements in sense of smell and general assessment of nasal-sinus and asthma symptoms \( P < 0.0001 \). These results persisted for 1 to 5 years \( P < 0.0001 \).

Mean prednisone doses decreased from 10.8 mg/d to 3.1 and 3.6 mg/d at 6 months and greater than 1 year, respectively. Of the 171 patients, 34 (20%) discontinued aspirin treatment because of side effects, and 115 (77%) responded to aspirin treatment after eliminating those who discontinued aspirin treatment because of side effects; the improvement rate was 115 (78%) of 148 patients. Of the 126 patients who completed a year or more of aspirin treatment, 110 (87%) experienced improvement.

Conclusion: Aspirin desensitization followed by daily aspirin is efficacious by at least the first 6 months of treatment and continues to be effective for up to 5 years of follow-up. (J Allergy Clin Immunol 2003;111:130-6)

Key words: Aspirin, asthma, rhinitis, desensitization, nonsteroidal anti-inflammatory drugs, aspirin desensitization treatment

In 1922, Widal et al conducted aspirin desensitization in one aspirin-sensitive asthmatic patient, and in 1976: Zeiss and Lockey desensitized another patient to indomethacin. In 1980, Stevenson et al reported that 2 patients with aspirin-exacerbated respiratory disease (AERD) were desensitized to aspirin. Both patients were treated with 325 mg twice daily and, during the next year, experienced improvement in nasal symptoms, reduction in sinusitis episodes, and reduction in need for systemic corticosteroids.

Since then, 4 studies have reported that after aspirin desensitization and daily aspirin treatment, the majority of patients with AERD experience improvement in their chronic respiratory symptoms. In our 1984 study, we showed a higher percentage of responders (69%) in the study patients receiving 650 mg of aspirin twice daily than in those taking 325 mg/d (57%) or 325 mg twice daily (60%). In 1996, Stevenson et al reported that 65 patients with AERD who were treated with an average of 1300 mg of aspirin daily experienced significant improvement in their disease symptoms and reduction in use of systemic and nasal corticosteroids when evaluated at 1 to 3 years and 3 to 6 years later. The purpose of this current study was to determine whether patients with AERD experienced improvement in their disease during the first 6 months of aspirin treatment and, furthermore, whether this response persisted. Second, we sought to determine precisely how many patients experienced improvement, did not experience improvement, or had side effects from aspirin treatment after aspirin desensitization.

METHODS

Patients

Between July 1995 and July 2000, 172 patients signed consent forms approved by our human subjects committee, were admitted to our General Clinical Research Center (GCRC), underwent standard single-blind oral aspirin challenges, and experienced respiratory
When Tom Lally started napping off at traffic lights, he knew he needed help. So on this windy, rain-soaked morning, he finds himself at the Center for Sleep Medicine at Nyack Hospital in search of eight solid hours of shut-eye.

"I noticed a pattern in the last six months where I would wake up in the middle of the night, sometimes three or four times, and then, of course, when the clock goes off, I could sleep for another 14 hours," said Lally, a 65-year-old Orangeburg resident and semi-retired communications salesman.

Lally is being screened to see if there might be an underlying medical problem causing his nightly disturbances — such as sleep apnea — and whether he should come in for an overnight stay and a polysomnogram, an electronic monitoring of his sleep pattern, breathing, oxygen level, heart rate and muscle tone.

If he does, Lally would be ensconced in a private room newly decorated in sand and earth tones with a dark wood armoire, cable television, VCR and a small camera on the wall that bears the brand "Silent Witness."

"The center has been in business for some 15 years. Until they get treated, must sleep-deprived patients don't realize how bad they really felt or how tired they really were," director Catherine Sullivan says.

Cynthia Taicner, 30, knew exactly how dire her situation had gotten when her nasal polyps completely blocked her sense of smell a year ago. Her quick-growing polyps — which had to be surgically removed — her asthma, sinus infections and acute sensitivity to aspirin made Taicner a candidate for a cutting-edge aspirin desensitization program. The 375-bed Nyack Hospital is one of only a few hospitals in the country that offer it.

Over the course of two days, Taicner receives increasing doses of aspirin, slowly building her tolerance and quickly treating any adverse reaction, such as respiratory distress. If Taicner can become accustomed to it, a daily dose of aspirin can lessen asthma's effects and slow the polyps' return, explains Dr. John Bosso,

Reach Kathy Moore at kmoore@thejournalnews.com or 845-228-2276.