PLASMA EXCHANGE AND INTRAVENOUS IMMUNE GLOBULIN

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The human immune system protects the body from foreign invaders, such as bacteria and viruses. At times, the body's immune system goes awry and begins to attack its own tissues. This can result in autoimmune disorders and inflammatory diseases. Plasma exchange (PE) and intravenous immune globulin (IVIG) are treatments designed to either remove the abnormal antibodies produced by the body or modulate the immune system to reduce the autoimmune response or reduce the inflammation. PE and IVIG have been used to treat myasthenia gravis (MG), Guillain-Barré syndrome (GBS), chronic inflammatory polyneuropathy, polymyositis, central nervous system systemic lupus, and vasculitis. The use of PE and IVIG in multiple sclerosis is being investigated.

Plasma exchange, also known as plasmapheresis, may help the individual with an autoimmune or inflammatory neurologic disorder. Plasma exchange is a procedure in which blood is removed from the body through an intravenous (IV) needle in the arm. A machine separates the whole blood into its two parts, which include cells (solid) and plasma (liquid). Abnormal antibodies circulate in the plasma. During PE, the plasma is removed and replaced with a blood product called albumin or fresh-frozen plasma. The cells or solid portion of the blood is mixed with the plasma replacement and returned to the body. The person's own plasma with the abnormal antibodies is discarded.

PE is usually performed on an outpatient basis. Some people may need to be hospitalized, and others may already be in the hospital during treatment. PE involves the insertion of an IV needle into both arms, although one arm may be used. The blood is removed through one IV and returned through another. The time required to complete one PE procedure varies from 1 to 3 hours, depending on factors such as height, weight, and amount of plasma to be exchanged. Some people are prescribed PE three times a week. Others have treatments daily, weekly, or even monthly. Your physician, your present condition, and your response to treatment will determine

the number of PE treatments prescribed. After the treatment, the IV needles are removed. If long-term treatment with PE is needed, a special catheter designed for long-term use may be placed into a larger vein in the shoulder or groin. This catheter is left in between treatments. A person's vital signs, including blood pressure, pulse, and respirations, are monitored throughout the procedure.

In preparation for the procedure, you should eat and drink fluids as you normally would. You should check with your physician about taking your medications before the procedure. Some medications are bound to plasma and may be cleared out of your system during the procedure. These medications should be taken after the procedure. You should also wear comfortable clothes and bring a radio or cassette player with headphones to help you pass the time.

Immediately after the procedure, many people do not feel any different than before the procedure. Others may feel a transient tiredness. Adverse effects that may occur during the treatment include a drop in blood pressure (hypotension), feeling of faintness, dizziness, blurred vision, or chills. Another rare adverse reaction is an allergy to the solutions used. Signs and symptoms of an allergic reaction include itching, wheezing, and rash. These symptoms usually occur during the treatment. One rare adverse effect of the treatment is bleeding from the solutions used to prevent blood from clotting in the IV tubing. A loss of important electrolytes, including potassium and calcium, can also occur as a result of PE. Laboratory studies are performed before and after the procedure to monitor clotting factors and electrolytes.

Many people with MG and GBS are treated with PE, because it works quickly to improve their strength. Most people begin to improve within the first few days of treatment. For the person with MG, the improved muscle strength is only transient, and weakness may return within 1 to 2 months after the treatments are discontinued. People with severe GBS have a better long-term outcome when treated with PE.

There are several reasons why a person with MG may require PE. One is to treat severe muscle weak-

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ness that may occur during viral illnesses, such as the flu. Another is to increase muscle strength in preparation for surgery. If individuals are not experiencing good muscle strength on their present medications, the physician may prescribe plasmapheresis on an ongoing basis.

IVIG has been used for decades in the treatment of a variety of inflammatory and infectious diseases. These include idiopathic thrombocytopenia purpura and chronic lymphocytic leukemia. It is also used in the treatment of autoimmune diseases, including MG. The exact mechanism of action is unknown. It does seem to affect the function or production of antibodies in the immune system.

IVIG is a human blood product that is pooled from many donors. Even though it is a human blood product, the risk of exposure to human immunodeficiency virus and hepatitis B and C is minimal.

IVIG is usually administered in a physician's office or infusion clinic. Some people may receive IVIG in the home after initial treatment in the physician's office. IVIG is administered by IV infusion slowly over several hours. Vital signs are monitored throughout the infusion. The dose is based on the individual's weight. The number of days and the frequency with which it is given varies according to the disease being treated and how the person responds to the treatment. In myasthenia gravis, IVIG can be used to treat worsening symptoms. In this case, it may be given as a one-time series of treatments. It can also be used to treat people with MG who do not respond to standard treatments. It is then given as a series of treatments over several months. The onset and duration of improvement of symptoms is variable. The individual may not feel im-

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provement for 1 to 2 weeks. The improvement is only tentporary, usually lasting 5 to 6 weeks. IVIG has also been used successfully in the treatment of people with GBS.

Adverse effects may occur during treatment with IVIG. Some people may experience headache, chills, nausea, vomiting, and muscles aches. These symptoms can be treated by decreasing the rate of infusion or by certain medications. Some people may experience fatigue, fever, or nausea. These symptoms may persist up to 24 hours after the infusion. Irritation at the IV site can also occur. Severe reactions, such as an allergy, are rare. Some people are given medication, such as acetaminophen, an antihistamine, or a corticosteroid, before the administration of IVIG to prevent some of these adverse effects. The decision to administer one of these medications is based on the person's medical history and previous response to the treatment.

Treatment with PE and IVIG is expensive. These procedures usually need to be precertified by your insurance company. You should discuss cost issues with your physician and insurance company to ensure adequate coverage and prevent unforeseen financial dilemmas.

Many people feel anxious about starting a new treatment. This anxiety stems in part from the many unanswered questions a person may have, such as, How will I react to the treatment? Will it work for me? How long before I see improvement? How long will the improvement last? These anxieties are normal. You should talk to your physician or nurse about your concerns. After several treatments, you will know what to expect, and some of these fears will be allayed.

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