The ITP Support Association Platelet Reprint Series

No. 14 – IVIG The Good and Bad News

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Title: **Intravenous Immunoglobulin ITP; The Good News – and the Bad News**
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In a prior edition of The Platelet, we discussed the pros and cons of steroid treatment for persons with ITP. Now we would like to review another commonly used ITP therapy, intravenous immunoglobulin (IVIG), also known as gamma globulin.

So, what is gamma globulin or IVIG? Actually, it is a concentrated form of antibodies derived from blood plasma (the clear part of the blood). Antibodies are proteins made by the immune system that react against germs and other "foreign" substances. IVIG is rich in so-called IgG antibodies (the most common type) targeted against a wide variety of viruses and bacteria. It contains very little IgA and IgM, two other types of antibodies in our blood. Concentrated antibody treatments have been used for nearly 50 years for people with antibody deficiencies who are prone to develop infection.

So where does IVIG come from and how is it made? It is produced by a process of fractionation or separation of blood plasma into various components. Many hundreds of liters of blood plasma that have been donated by both volunteers and paid individuals are "pooled" or mixed in a huge vat and then concentrated and purified. Either heating or chemical treatments sterilize the product and remove other impurities so as to permit the safe administration of this by vein.

You might be asking, why would one want to give more antibodies to people with ITP, who already have too much of an antibody (against their platelets)? That is indeed a good question. In 1981 a physician in Switzerland, Dr. Paul Imbach, was giving IVIG to one of his patients with antibody deficiency who happened to have ITP as well. Much to his surprise, the patient's platelet count rose! Such responses were documented in many other patients, and by the mid-1980's a number of different IVIG preparations were approved for use in ITP patients around the world.

IVIG is given as a slow infusion into a vein over 4 to 6 hours. It is sometimes repeated the next day. IVIG works like steroids in that it blocks the destruction of the ITP patient's antibody-coated platelets within the spleen and liver. One of its advantages is that it works very rapidly. Within a day or two of therapy the platelet count usually begins to rise, often to normal within a week. However, after several weeks the effect wears off, and the platelet count returns to baseline. Nevertheless, the immediate response to IVIG makes it ideal for emergency treatment of persons with ITP who are having severe bleeding or whose platelet counts are dangerously low, especially if they are at risk of injury or having a surgical procedure. Most physicians believe that steroids, even when they are given in high doses by vein, do not act as rapidly as IVIG in such emergency circumstances. Another potential advantage of IVIG treatment over steroids is that the former cannot mask leukemia so it can be given without necessarily requiring a bone marrow examination first.

Patients can receive IVIG repetitively over a period of many months, although the seemingly beneficial effect often wanes with time. Yet, in some patients its regular use may allow for postponement of splenectomy or other ITP treatments.

Unfortunately, IVIG has its problems. First, it is inconvenient and sometimes uncomfortable for the ITP patient, since an intravenous infusion is required, as part of a long day in the clinic infusion room or hospital. Also, IVIG has a number of side effects. Most of these are immediate (occurring during or within a day after the infusion) and include nausea and/or vomiting, a chill, rash, or headache. The headache is sometimes very severe, raising concern about bleeding in the brain. This may necessitate an emergency CT scan to rule out brain hemorrhage. Another serious (but fortunately uncommon) complication is kidney failure. Although IVIG preparations are purified to remove viruses, one can never be positive that all potentially infectious agents have been eradicated since IVIG is, after all, a blood derivative. Less than a decade ago several hundred persons developed hepatitis as a result of use of some contaminated IVIG. However, since then no viral contamination has been documented, so current IVIG preparations appear to be quite safe. Another problem with IVIG is its expense. A single dose for a child costs over $2,000, and treatment for an adult may cost $5,000 or more. However, in the U.S. its cost is covered by health insurance plans and in the UK by the NHS.

So what's the bottom line regarding IVIG? It is generally the best way to rapidly increase the platelet count in ITP patients with severe thrombocytopenia who are bleeding. But its expense, need for intravenous infusion, and side effects make it far from an ideal treatment. In addition, for some ITP patients it just doesn't work. Finally, like other drug treatments for ITP, IVIG should not be administered just because the platelet count is low. We physicians should be treating patients, not platelet counts!