GBS | CIDP
Foundation International

Summer 2013

The Communicator

Providing Strength Through Support

MEDICAL ISSUE

This annual Special Medical Issue of the GBS/CIDP Communicator features articles and comments from experts in the field of GBS and CIDP. We thank all the contributors whose schedules are demanding but nevertheless considered the needs of our readership in bringing us the latest information on GBS and CIDP. We suggest that these newsletter issues be saved. Make them part of a reference library to serve as a ready resource for you or your physician. Additional copies are available upon request.

PNS
PERIPHERAL NERVE SOCIETY

The GBS/CIDP Foundation International is proud to be a Gold Sponsor of the PNS Meeting held in Saint Malo, France, June 29-July 3, 2013.

The Peripheral Nerve Society (PNS) sponsors scientific meetings to bring together clinicians and basic scientists interested in peripheral neuropathy and the neurobiology of the peripheral nerve.

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Ken's Korner

This issue of the Communicator is our special annual science issue. The Board recently approved funding for three new research grants. (See article) Since the inception of the Foundation's grant program in 2004, the Foundation's total dollars to research now exceeds $1.5 million.

Look for a "Communicator Update" shortly in the mail or your email. We will share our many exciting spring activities including the Berlin Liaison meeting, the "Carolina Art Soiree" and our first annual "Walk and Roll for GBS/CIDP" in the Greater Delaware Valley, Pennsylvania area.

The planning process for the 2014 Symposium has already begun. A team is traveling to Orlando Florida and hopefully we will be able to share dates shortly. Our goal for the symposium is to provide a unique and exciting opportunity for patients and physicians to interact. The program consists of general sessions and workshops which offer practical information and teach valuable skills to help providers, patients and caregivers. Attendees will learn about every phase of GBS/CIDP and variants from diagnosis, treatment and care to rehabilitation, coping skills, emotional issues and the latest in research.

Ken Singleton - **EXECUTIVE DIRECTOR**

Research Grants Awarded!

The following three Research Grants have been granted for 2013.

1. Guillain-Barré syndrome in low-income countries and participation in IGOS.

Hubert P. Endtz, MD PhD1,2,, Zhahir Islam, PhD1, MD1, Deen Mohammed, MD PhD3, Bart C. Jacobs, MD PhD*

The project consists of two studies with the following objectives: (1) to define the clinical course and outcome of Guillain-Barré syndrome (GBS) in low-income countries and to identify the preceding infections and other factors that influence outcome, and (2) to investigate the safety of small volume plasma exchange (SVPE) in patients with GBS in Bangladesh. Three hospitals in Dhaka, Bangladesh will participate in the International GBS Outcome Study (IGOS), which will provide a website and infrastructure for standardized measurement of outcome. (2) Twenty patients with severe GBS who are unable to walk will be included in a phase II study investigating the safety of SVPE, using the IGOS database for data registry. This is an important study since most patients in low income countries can not afford a plasma exchange machine or intravenous immunoglobulin which is shown to significantly impact outcome in severe cases of GBS. The SVPE does not require either of these although it is labor intensive.

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We take this opportunity to thank ***CSL Behring*** *for their support in making this newsletter possible through an unrestricted educational grant.*

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Pain in Guillain-Barre Syndrome

Jonathan Goldstein, MD
Member, GBS/CIDP Medical Advisory Board

Guillain-Barre Syndrome is an immune-mediated disorder resulting in weakness and numbness. The onset is acute and can vary from mild weakness to severe weakness requiring a ventilator. One of the symptoms frequently overlooked in the early stages is pain. It has been estimated that 33-71% of GBS patients have pain as an early symptom.[1]

Patients often describe severe back or limb pain that may only respond to narcotic medication. This is felt to be due to the inflammation of the nerve roots near the spinal cord. Patients also complain of unpleasant (dysesthesias) tingling in the finger, toes and sometimes around the mouth or the tongue.

Acutely the pain and dysesthesias are managed by a combination of medications. The faster working medications are intravenous narcotics when acetaminophen and non-steroidal medications do not work. This is usually short-term treatment on the order of a few days to a week. After this acute phase the pain typically decreases although the dysesthesias may continue. The longer-term treatment of these painful tingling sensations revolve around two main medications: gabapentin and pregabalin. These medications are very effective in

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Research Grants Awarded!

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2. Alpha-1 - antitrypsin as a novel therapy for CIDP.

Maureen A. Su, MD, Assistant Professor, Department of Pediatrics and Microbiology/Immunology, University of North Carolina at Chapel Hill

Alpha- 1 -antitrypin (A1 AT) is a protein that inhibits serine proteases, and reverses certain autoimmune diseases by exerting potent immunomodulatory effects. Whether A1 AT is effective in reversing inflammatory autoimmune peripheral neuropathy is unknown. The investigators propose that A1 AT may reverse autoimmune peripheral neuropathy through increasing the numbers of suppressive regulatory T cells. They will test this hypothesis using a NOD. AireGW/+ mice that spontaneously develops autoimmune peripheral neuropathy and shares many features in common with sporadic CIDP. Since A1 AT is safe and approved for replacement therapy in humans, findings from this study have the potential for immediate translation to CIDP patients.

3. Lentivirus transduced dendritic cells expressing VIP for the Treatment of CIDP.

Jerry R. Mendell, MD, Zarife Sahenk, MD, PhD, K. Reed Clark, PhD

The spontaneous autoimmune peripheral polyneuropathy (SAPP) model in B7-2 KO NOD mice mimics a progressive and unremitting course of CIDP. Tolerogenic, bone marrow derived dendritic cells (tolDCs) [myeloid origin (mDCs)] have been shown to be attracted to inflamed tissues and lymphoid tissues to suppress autoimmune responses by priming T cells to be regulatory T cells (Tregs). Vasoactive intestinal peptide (VIP) was shown to play an active role in generation of tolDCs and have therapeutic potential in an EAE (experimentalautoimmune encephalomyelitis) model resulting from an antigenspecific Treg induction. VIP expressing DCs, transduced with lentiviral vectors, (LV VIP DCs) exerted a sustained clinical effect on mouse model of EAE reducing the progression of the disease. In this study, the investigators will deliver LV VIP DCs intravenously to SAPP mice to suppress immune reactions against myelin proteins in the peripheral nerves and prevent disease (AIM1) or reverse the disease process (AIM.2).

IVIG For CIDP: We Know It Works, But How Should We Use It?

David S. Saperstein, MD
GBS/CIDP Center of Excellence at Phoenix Neurological Associates, Phoenix, AZ

As readers of this newsletter are likely well aware, intravenous immunoglobulin (IVIG) is commonly the treatment used for CIDP. It is accepted as an effective and well-tolerated therapy. In this article I would like to discuss some areas of uncertainly regarding how IVIG should be administered. This includes issues of how much to give, how to give it, how often to give it, and when to stop it.

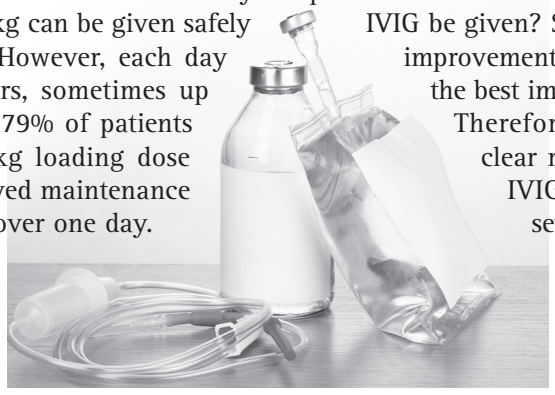
Most physicians start IVIG with a so-called "loading" dose. The purpose of this dose is to get an ample amount of IVIG into the system. The dose used for this is usually 2 grams (g) per kilogram (kg) of body weight. Honestly, no one knows for certain if this is the best dose but most everyone uses this dose. The loading dose is usually followed by a maintenance dose. The amount of IVIG used for maintenance varies among physicians, with some giving another 2 g per kg and others giving 0.4 to 1 g per kg. The maintenance dose is typically repeated at some interval, such as every 3 to 4 weeks. In a relatively recent, large, international, research study of IVIG in CIDP (the so-called "Immune Globulin Intravenous CIDP Efficacy", or "ICE", trial) IVIG was given at a loading dose of 2 g per kg followed by a maintenance dose of 1 g per kg given every 3 weeks. This has become a popular protocol among many physicians to treat patients with CIDP.

Another area where there is great variability among doctors is over how many days to give each IVIG dose. IVIG contains a large amount of protein and fluid, so giving a 2 g per kg dose in a single day is not tolerated by or advisable for most patients. The faster IVIG is infused the greater the chance for side effects such as headache. Patients who are elderly or have medical issues, such diabetes or heart or kidney problems, can experience complications if too much IVIG is given at one time or infused too quickly. Therefore, a dose of IVIG is usually split up over several days. Many years ago, when physicians started using IVIG for neurological diseases like CIDP, a 2 g per kg dose would be divided over 5 days. However, it has become clear that IVIG can be administered more quickly. In most otherwise healthy patients an IVIG dose of 2 grams per kg can be given safely and comfortably over 2 to 3 days. However, each day of infusion can require several hours, sometimes up to 5 or more hours. In the ICE trial 79% of patients successfully received their 2 g per kg loading dose over 2 days. Ninety-six percent received maintenance doses of 1 g/kg in less than 5 hours over one day.

The number of days over which IVIG is administered can make a big difference in how convenient or inconvenient this treatment is to patients. Investing 4 or 5 days every month is very restrictive. In contrast, a couple of days per month is much more doable, even for patients keeping up with jobs and other activities of busy lives. It has been my observation that a great number of patients are still receiving IVIG over too many days. For most patients there is simply no reason to be receiving IVIG over 4 or 5 days each month. The majority of my patients successfully receive 1 g per kg of IVIG in a single day. Of course, there are some patients sensitive to infusion side effects and require a different infusion schedule.

A further variable to consider is where IVIG is infused. Early in our experience with using IVIG, every patient received IVIG in the hospital. Based on years of experience in giving this drug it is clear that IVIG can be safely administered in an outpatient infusion clinic or even at home through a home infusion service (a nurse comes to the patient's home and administers the IVIG). One can easily appreciate how the location where IVIG is administered can have a huge impact on how convenient this therapy is to a patient. While it is great to have all these options, not all locations for infusing IVIG are equal. Many hospital outpatient infusion centers do not have a lot of experience with IVIG and may try to infuse the medication too quickly, leading to headache, chills, malaise and other unpleasant symptoms. Of course the IVIG will not be infused too quickly if the physician ordering this treatment gives specific instructions. Unfortunately, many clinicians who are unfamiliar with treating CIDP do not give such instructions, leading to a situation where both doctor and nurse are unaware of the best ways to administer IVIG. There is also a great deal of variability among home infusion companies. There are several national companies that specialize in treating patients with CIDP and have protocols in place to make sure infusions are optimized so that side effects are minimized.

After treatment with IVIG is initiated additional questions remain. An important one is when should more IVIG be given? Some CIDP specialists believe that the improvement seen after one treatment with IVIG is the best improvement that is ever going to occur. Therefore, if a patient does not show any clear response they will not give any more IVIG (keeping in mind that it can take several weeks to see the effects from the IVIG treatment). Other specialists believe that it can take at least 3 months of treatment with IVIG to determine whether or not a patient



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IVIG For CIDP: We Know It Works, But How Should We Use It?

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is going to respond. In the ICE trial the maximal amount of improvement occurred after an average of 3 months. Even prior to the ICE trial it had been my practice to give most CIDP patients 3 months of treatment before concluding that IVIG will not help them.

In cases where a CIDP patient responds to the initial dose of IVIG, there remains variability in practice of how or when to give more IVIG. Some physicians will wait until the patient starts to worsen and then give another dose of IVIG. I have several concerns with this strategy. First, patients can worsen quickly so it can be game of brinksmanship to get IVIG on board before the patient has lost a lot of ground. Even when there is not rapid deterioration it is undesirable to force a patient to worsen to get more treatment. We do not know all the factors that determine a patient's response to IVIG. There are valid concerns that untreated CIDP can produce irreversible damage to nerves. Another concern with this management approach is that it can be hard to know when a patient has achieved maximal improvement. A patient may seem to be doing very well after a single course of IVIG, but sustained treatment may bring about further improvement. I refer again to information learned from the ICE trial: maximal improvement occurred after 3 months (these patients were treated with an initial dose of 2 g per kg followed by 1 g per kg every 3 weeks). This tells us that multiple treatments are needed for most patients to reach their maximal degree of improvement.

Most physicians treating CIDP do give more than a single course of IVIG and most continue treatment every 3-4 weeks on an ongoing basis. Some patients exhibit very clear fluctuations in response to treatment IVIG, such that the benefits wear off after a consistent period of time. In cases such as these the interval between doses can be based on how long the benefits last. Therefore, there are some patients who receive IVIG every 2 weeks and others who receive IVIG every few months.

Once a decision is made to give repeated doses of IVIG, the next question to address is when can IVIG be stopped? There certainly are CIDP patients who require lifelong treatment with IVIG and patients have done well with this for decades. However, a valid criticism of physicians treating CIDP, specialists and non-specialists alike, is that we probably overuse IVIG in most patients. In the ICE trial IVIG was stopped after 6 months. Almost 50% of the patients remained stable over the next 6 months without any further IVIG treatment. Of course, the other half worsened and needed to be placed back on IVIG maintenance treatment. A more recent study performed in Italy, led by Dr. Eduardo Nobile-Orazio, found similar findings: after stopping IVIG following 6 months of treatment 62% of CIDP patients remained stable.

More research is needed to see if we can find ways to predict which patients can come off of IVIG without relapsing. Even with our current knowledge, we should strive to get patients off of IVIG or at least find the minimum effective dose. When to try this is unclear, but after 6 months of treatment it is reasonable to make a change. Whether it is best to stop IVIG, spread out the dosing interval, or decrease the dose is not known. CIDP specialists like myself have seen a large number of patients on lifelong IVIG treatment who did not need this. Continued IVIG treatment subjects patients to ongoing expense, inconvenience, and risks (while IVIG is overall a rather safe therapy patients can experience serious complications such as kidney damage, blood clots, heart attacks and strokes). The large cost of continued, unneeded IVIG treatment affects patients and society. Insurance companies scrutinize IVIG usage very closely because of its expense. This results in insurers trying to keep patients from getting started on this expensive therapy. Therefore, although more needs to be learned about how to use IVIG in the long-term treatment of CIDP, at this time physicians and patients need to take a thoughtful approach to the chronic use of IVIG treatment.

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Hughes RA, et al. Intravenous immune globulin for the treatment of chronic inflammatory demyelinating polyradiculoneuropathy (ICE study): a randomised placebo-controlled trial. Lancet Neurology 2008;7:136.

Nobile-Orazio E, et al. Intravenous immunoglobulin versus intravenous methylprednisolone for chronic inflammatory demyelinating polyradiculoneuropathy: a randomised controlled trial. Lancet Neurology 2012;11:493.

Pain in Guillain-Barre Syndrome

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helping control the painful feet and finger tingling.

It is important to avoid chronic pain in GBS patients as this may lead to decreased ability to carry out physical therapy and slow recovery. Patients with chronic pain also are subject to depression.

In summary, patients, caregivers and physicians should be aware of pain as a major symptom of Guillain-Barre Syndrome and be prepared for proper management. If handled early on pain can be controlled in the acute and chronic stages.

REFERENCES:

1. Supportive care for patients with Guillain-Barré Syndrome. Hughes RAC, et al. Arch Neurol. 2005;62:1194-1198.

International GBS Outcome Score (IGOS): Update of a World-Wide Study

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Background of the study

GBS knows no boundaries and people from all countries and all ages suffer from this complex disease. With a yearly frequency of 10 to 15 new patients per million, GBS affects at least 70,000 persons in the world every year. Science has progressed considerably in the understanding of GBS, yet the cause of disease is still not fully understood. For example, presently the full spectrum of infections, vaccinations or other events that may trigger the onset of GBS is unknown. Why these events cause GBS in some persons but not in most others exposed to the same infection or vaccination is also unknown. Antibodies produced by the immune system during these infections contribute to the nerve damage, but their relationship with the clinical course has not been fully defined. Knowing these relations will contribute to our understanding why patients highly differ from each other in clinical manifestations, response to treatment and long-term consequences. We need to know what factors explain why some persons have a relatively mild form of GBS, while others are fully paralyzed and on the ventilator for months. Understanding and predicting the disease course in individual patients will be a cornerstone in the improving of treatment. At present, all patients receive the same treatment, even though none of the patients have the same GBS. We expect to improve the recovery if we can provide 'personalized treatment and care' based on the patient characteristics and the type of GBS. Last but not least, the majority of patients suffer from residual complaints but very little is known how these can be treated, and preferably be prevented. IGOS aims to make a significant contribution to solving all these unsolved issues.

Study design and strength

To address these issues with sufficient accuracy investigations of large numbers of patients are needed. This has historically been a problem for GBS research, since the 70,000 yearly new patients are scattered around the world. Individual countries and scientists are unable to include a sufficient number within acceptable time limits, and international collaboration is the only way to solve this. In IGOS we aim to collect the information from at least 1000 patients by intensive international collaboration. All patients are followed at standard intervals from the earliest phase of disease up to at least 1 year after. There is the possibility to extend the follow-up for another 2 years to get a better grip on the long-term consequences. At these time points all patients are clinically examined and documented according to the same protocol. At some of these time points blood samples will be collected to identify infections, antibodies, genes and other markers to monitor disease activity. In addition, data will be collected about treatment efficacy and safety. In this way IGOS will result in the largest data- and biobank ever collected in the field of GBS research. All data and biomaterials will be available to predict the clinical course and to optimize the treatment in individual patients. The strength of IGOS is the large number of patients, highly standardized collection of data, and the long follow-up period. The IGOS is also exceptionally large with respect to the number of collaborating expert scientists and clinicians that will use the data- and biobank to study GBS. More than 12 expertise groups are being set up, each focussing on a specific research question in a specific topic. Moreover, this extensive study attracts many young researchers and clinicians and giving us the opportunity to train them for the future. To conduct this project is a major undertaking that requires funding to be successful. We gratefully acknowledge the contributions of the GBS-CIDP Foundation International, our supporter of the first hour. Based on their funding we have been able to develop a website to collect the data from all over the world and to provide the infrastructure to proceed the study.

Update of IGOS

All countries are different and to conduct such a project each country requires a slightly different approach. In IGOS all participating countries have a so-called country coordinator that leads the network of participating neurologists from that country. At present, 14 countries have received approval to participate in IGOS from their ethical committees (so called Institutional Review Boards or IRB). The country coordinators are Dr. Ricardo Reisin (Buenos Aires, Argentina), Prof. Amilton Antunes Barreira (São Paulo, Brazil), Prof. Peter van den Bergh (Brussels, Belgium), Dr. Yann Péréon (Nantes, France), Dr. Thomas Harbo (Aarhus, Denmark), Prof. Hans-Peter Hartung and Dr. Helmar Lehmann (Düsseldorf and Cologne, Germany), Prof. Isabel Illa (Barcelona, Spain), Prof. Eduardo Nobile-Orazio (Milan, Italy), Dr. Bianca van den Berg and Dr. Bart C. Jacobs (Rotterdam, The Netherlands), Prof. Hugh Willison and Dr. Govind Chavada (Glasgow, UK), Prof. Ken Gorson and Prof. Kazim Sheikh (lab) (Boston and Houston, USA), Prof. Tom Feasby (Calgary, Canada), Prof. Susumu Kusunoki (Osaka, Japan), Dr. Stephen Reddel (Sydney, Australia). As we speak (June 2013), 84 centers around the world have obtained approval and participate in IGOS and 126 patients have

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Variants of the Guillain-Barré Syndrome

Mazen M. Dimachkie, M.D., Professor of Neurology
Director, Neuromuscular Section, Department of Neurology, University of Kansas Medical Center
and
Richard J. Barohn, M.D., Gertrude and Dewey Ziegler Professor of Neurology
Chairman, Department of Neurology, University of Kansas Medical Center

Guillain-Barré syndrome (GBS) is a rare immune-mediated neuropathy that typically present with rapidly progressive diffuse body weakness. This progresses from the legs to the arms and involves the face muscles over 2 to 4 weeks, with numbness and tingling sensation and on examination loss or reduction of muscle stretch reflexes. It is preceded in most cases by a respiratory or gastrointestinal infection. Up to 30% of cases may require a respirator and blood pressure often will fluctuate at the peak of the illness. A third to two-thirds of cases experience marked nerve pain at various stages of GBS. A spinal tap shows an elevated protein in the spinal fluid in the overwhelming majority of cases. Treatment with washing of blood (plasmapheresis) or gammaglobulin (intravenous immunoglobulins) blood product speeds up the rate of recovery. GBS patients start improving after 2 to 4 weeks of stabilization and most patients experience a good recovery in the sense that they are able to walk without support 6 months after the onset.

The most common form of GBS is acute inflammatory demyelinating polyneuropathy (AIDP) as accounts for up to 80% of GBS cases. In AIDP, the target of the immune attack is the insulation around the nerve cable also known as peripheral nerve myelin. Therefore, nerve conduction testing shows therefore slowed speed of nerve conduction in all nerve segments, including distal, intermediate and proximal parts. A variant of GBS that affects the nerve cable (also known as axon) was termed acute motor axonal neuropathy (AMAN). It was report in 1993 initially from Northern China and was therefore given the name Chinese paralytic illness. The later was soon described in other parts of the world including the U.S. where it accounts for 3 to 10% of GBS cases. In AMAN, the size of motor responses on nerve conduction is small or these may be absent. When the disease is more severe, it also involves the sensory nerves and this axonal variant is called AMSAN which is an abbreviation for acute motor and sensory axonal neuropathy in 3 to 5% of cases. AMAN and AMSAN are associated with a gastrointestimal infection due to *Campylobacter Jejuni*. Although more than two million cases of *C. jejuni* infection occur each year in the United States, only about one per 1,000 have genetic susceptibility that leads to the development of GBS. *C jejuni* has molecules on its surface that look like some of the nerve molecules (GM1). Therefore, antibodies in reaction to the bacterium are not selective to it but also attack peripheral nerves. GM1-like oligasacahrides Weakness in AMAN progresses more rapidly than it does in AIDP. AMAN may lead to need for artificial ventilation within the first week and is followed by prolonged and severe weakness. AMAN cases often have elevated titers of IgG antibody titers to GD1a and GM1.

Restricted motor variants in which GBS is not causing diffuse but rather localized muscle weakness occur in nearly 5% of cases. One of those restricted motor variants is the pharyngeal-cervical-brachial (PCB) pattern. PCB is a rare motor variant that presents with droopy eyelids, slurred speech, difficulty swallowing, weakness of the face and neck muscles that descends to the arms but spares the legs. GT1a antibodies correlate with the presence of swallowing and speech troubles and may also be seen with Bickerstaff brainstem encephalitis (BBE, see below). An even less common paraparetic motor variant affects only the legs with severe low back pain and loss of leg reflexes. Gadolinium-enhanced MRI scan of the lumbosacral spine reveals cauda equina nerve root enhancement in the paraparetic variant of GBS, and helps establish the diagnosis. Other rare variants include droopy without eye motion abnormalities, as well as weakness of both sides of the face or of the eye muscles with some hand and feet numbness.

There are several presentations where muscle weakness is the not the main symptom. These represent 5 percent of all GBS cases in the United States and the overwhelming majority is due to the Miller-Fisher syndrome (MFS). However MFS is more common in Japan and occur in up to 20% of GBS. Other very rare variants are purely sensory or only autonomic. Pure sensory form leads to gait imbalance (without other symptoms of MFS) and the pandysautonomic variant (fluctuating blood pressure leading to passing out, diarrhea or constipation, bloating, dry mouth or eyes) are both without significant weakness.

MFS was the first GBS variant to be described. MFS consists of rapid onset of decreased eye mobility leading to blurred or double vision, gait imbalance leading to falls and on examination reduced or absent muscle stretch reflexes

without any weakness. Most of the patients with MFS present with at least two of these features, and have an elevated spinal fluid protein and characteristic antibody to a peripheral nerve ganglioside called GQ1b. While we generally do not recommend ganglioside testing for GBS, we do that in MFS since GQ1b antibodies are highly sensitive and specific to MFS but may also be seen in GBS cases with marked eye difficulty. Some MFS cases may develop weakness and progress to otherwise classic GBS. It is important to bear in mind that five percent of typical GBS cases may develop, besides muscle weakness, eye motion difficulty, thereby overlapping with MFS. It is not evident in MFS whether plasmapheresis or intravenous immunoglobulins improve the prognosis of MFS as most patients are fully recovered at 6 months regardless of treatment.

Bickerstaff brainstem encephalitis (BBE) is another variant that is 10 times less common than the MFS and is triggered by an infection in over 90% of cases. BBE shares with MFS eye motion and pupil abnormalities as well as gait unsteadiness without frank muscle weakness. However a distinctive examination finding in BBE is increased muscle stretch reflexes. In addition, encephalitis in BBE also results in grogginess, sleepiness and poor memory. An elevated spinal fluid protein and anti-GQ1b antibody are less commonly seen in BBE than in MFS but white cells in the spinal fluid may be numerous.

Most GBS cases start improving within the first month with 80% achieving complete recovery within 6 to 7 months. It is important to treat all GBS cases and to start that as soon as possible. Like in AIDP, treatment of GBS with IVIg or PLEX speeds up recovery and is best done on the first 2 to 4 weeks after onset of symptoms. However, up to 15% are left with major weakness despite early treatment. IGOS is an international study that aims to identify early predictors of poor outcome so that additional intervention can be tested and if successful, be administered early on the course of GBS cases destined to remain severely affected. Most BBE patients given immunotherapy including steroids, plasmapheresis or IVIg completely recovered at six months. The one exception to the blanket treatment recommendation is the MFS. Most MFS patients recover well on their own by twelve months even without treatment.

International GBS Outcome Score (IGOS): Update of a World-Wide Study

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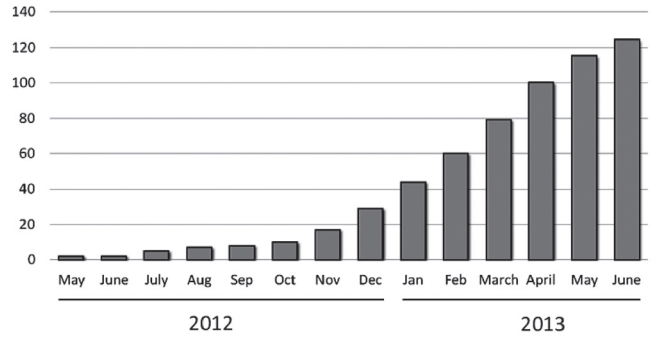
already been included (see figures). We expect the inclusion rate will go up since the number of participating centers is rapidly increasing. In addition, four other countries are in the process of getting approval including Bangladesh, India, Malaysia and Taiwan. We aim to reach the 1000 inclusions within 3 year and finish the last follow-up within 6 years. We thank the neurologists and patients for participating in this study.

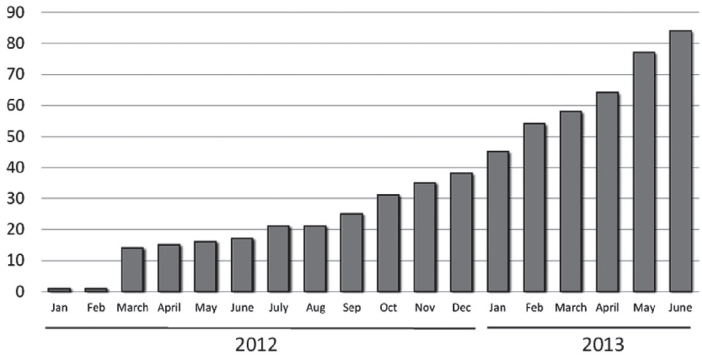
Interested in supporting IGOS?

IGOS is a major joint effort of patients, patient representatives, scientists and clinicians. You can support IGOS in various ways. Patients can participate provided they can be included within 2 weeks of onset of weakness and their neurologist is willing to participate and has received permission from the institute. If you are interested in the progress of this study you can visit the IGOS website for regular updates (**www.gbsstudies.org**). We will also provide regular updates of the study via the GBS-CDIP Foundation International. Scientists and clinicians interested to participate can visit the website and contact the IGOS secretary for more information. Last but not least: help the GBS/CIDP Foundation International with continued financial support to allow them to sustain their support for IGOS.

Number of patients included in IGOS



Number of hospitals with IRB approval



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DIRECTORY

Check the enclosed chapter directory and contact the chapter nearest you. In addition, our "subgroups" are listed below.

- **"CIDP" Group**
  For those with a diagnosis of chronic inflammatory demyelinating poly-neuropathy. Please identify yourself to the National Office in order to be put in contact with others around the country.
- **Children with GBS**
  Call Lisa Butler, 215-628-2771
  670 Penllyn Blue Bell Pike
  Blue Bell, PA 19422
  Son, Stuart had GBS at 5 1/2 years old
- **Children with "CIDP"**
  For children diagnosed with chronic inflammatory demyelinating polyneuropathy. A separate registry has been created. Please contact the National Office for details.
- **Group for Having GBS Two Separate Times**
  Please call the National Office for contact with others.
- **Miller Fisher Variant Group**
  Please call the National Office for contact with others.
- **Wheelchair Limited Group**
  Please call the National Office for contact with others.
- **AMSAN Group**
  Please call the National Office for contact with others.
- **A Teenage Pen Pal Group**
  Arielle Challander, 231-946-7256
  413 Shawn Drive
  Traverse City, MI 49684
  E-mail: GBSTeenPenPal@hotmail.com
  Arielle had GBS in 2006 at age 13. She is willing to share experiences that others might not understand. To have a teenage GBS'er pen pal, write, call or e-mail to Arielle.
- **Pregnant Women with GBS**
  Robin Busch, 203-972-2744
  264 Oenoke Ridge,
  New Canaan, CT 06840
  Robin has offered to share her experience with GBS which came about during her pregnancy. We have many such cases and reassurance from someone who has gone through this is needed support.
- **Bereavement Group**
  A group for anyone who has lost a loved one due to GBS/CIDP complications. Please contact: Bereavement Group at the National Office.
- **The "Campy" Group**
  Those whose GBS onset was identified as a result of the campylobacter bacteria. Numbers to be used for research purposes.