

Treatment of Guillain Barre Syndrome

Grace Wells

Alliance University School of Nursing

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Abstract

Guillain Barre is a neurological disorder where the immune system attacks its own peripheral nervous system. Patients usually present with weakness which then leads to the loss of deep tendon reflexes and paralysis. This condition can cause complications involving the respiratory and cardiac systems as well. The main treatment for Gullain Barre is Immunoglobulin therapy otherwise known as IVIG or a procedure called plasmapheresis. Physical therapy as well as supportive care is needed for these types of patients as well. Patients may be initially placed on a ventilator until respiratory function returns. Corticosteroids have been used to try and reduce the severity but there is debate about whether this treatment is effective. Ongoing care through physical, occupational, and speech therapies as well as nutritional support and treatment of complications can provide a patient with a more positive outcome of the disorder.

Introduction

Guillain-Barre syndrome is a neurological disorder with multiple causative factors such as Lyme disease, certain vaccinations, viral infections, surgeries, and many others. This disease causes the body's immune system to attack the peripheral nervous system in turn causing symptoms such as weakness and numbness. The progression of the disease eventually causes temporary paralysis and affects both the respiratory and cardiac systems as well. (Hopkins, 2023) Symptoms can also include those such as dysphagia, severe pain, abnormal blood pressure and heart rate, vision difficulties, constipation, and difficulty with bladder control. Diagnosis of Guillain Barre is done by physical exam checking deep tendon reflexes, medical/disease history, and additional signs and symptoms. Patients may also be diagnosed with a Nerve Velocity test/Electromyography or with a lumbar puncture (NIH 2023).

Case Study

Sixteen-year-old male with a history of Guillain Barre associated with Lyme disease. The patient has no known allergies and is a full-code. He has a left facial droop and weakness that is more prominent on the left side of his body. He has a history of heart block that is brought on by maneuvers such as sneezing. He aspirated on a bagel during a shift and had an episode where he was found to have shaking throughout his entire body. Upon assessment, he had orthostatic hypotension additionally. The patient also has a history of anxiety, GERD, and constipation. He has a strict intake and output and is on a regular diet. Vitals include temperature 97.7 F, heart rate 101, O2 99%, RR 19, and blood pressure 123/84. The patient is on precautions for falls, respiratory distress, immunosuppression, orthostasis, aspiration, and fractures.

He is in a status post-IVIG treatment for his Guillain Barre. He receives Hydralazine for his heart block. He receives Omeprazole for his GERD symptoms and additionally has a PRN

order for Tums and Pepcid. He receives PRN Ativan for his anxiety symptoms. To treat his constipation he receives a dose of Colace. For complaints of pain, he has an order for PRN Tylenol as well as Gabapentin for higher levels of discomfort. The patient wears lower extremity braces while in bed. He has venodyne boots that he is encouraged to wear while in bed, as well as encouraged to elevate both legs to prevent deep vein thrombosis. To reduce the risk of developing blood clots the patient also receives the anticoagulant Apixaban. He receives artificial tears administered every four hours daily for any eye irritation or redness.

Modern Treatment

The main treatment used for Guillain Barre is intravenous immunoglobulin therapy otherwise known as IVIg, this treatment is an IV infusion of immunoglobulins which are proteins that your immune system produces to fight infections. These infusions can shorten the recovery time of patients as well as lower the effectiveness of the antibodies that are attacking the body (NIH 2023). The standard rate of IVIg is 0.4mg/kg BW for five days. It's important not to infuse the immunoglobulins too quickly to avoid any potential complications such as renal failure. Monitoring for additional complications such as anaphylaxis, anemia, deep vein thrombosis, and transfusion-related lung injuries is important in the care of these patients (Shang et. al 2021).

Another widely used treatment is Plasmapheresis or a plasma exchange which is another type of immunotherapy. This procedure removes the plasma and replaces it with other fluids. Along with the plasma being removed, antibodies are also taken out similarly to IVIG which can help reduce the symptoms associated with Guillain Barre. This is often performed every other day for a total of approximately five sessions. When administering plasmapheresis it is important

to monitor for complications such as hypotension, meningitis, septicemia, deep vein thrombosis, and anaphylaxis (Shang et. al 2021).

Pharmacological

Corticosteroids or anti-inflammatory steroid hormones have been used to try to reduce the severity of the disease. There is controversy on whether these assist with the treatment of the disease or if there is no effect with or without the use of them. Some studies have shown that using the corticosteroid methylprednisolone (0.5 mg/day) alongside IVIg was more beneficial than just methylprednisolone alone (Seneviratne 2000).

Additional Measures

Physical therapy is very often used with these patients to increase muscle strength and assist with weakness associated with the disease. Patients who have had the combined dose of IV Methylprednisolone with IVIg are shown to have a better evaluation in physical therapy with walking sooner after diagnosis. There are some short-term effects but not enough research has been done to prove this fully including introducing a minor increase in IVIG instead of the usual stand dose. (Doorn et. al. 2010).

Occupational therapy is another therapy that can be proven beneficial in Guillain Barre patients. These therapists can help improve patients' independence during daily activities so recovery can happen more quickly. Therapists can help patients work through pain or weakness to regain function.

Emerging Treatment

There is a new method called the Zipper Method which is thought to reduce mortality rates. This method includes increasing the rate that patients are weaned from mechanical ventilation followed by a combined administration of both IV immunoglobulin and plasma

exchange repeated five times. More studies are being done to prove if this method will be more effective than either treatment process alone (Pereira, 2020).

There are a lot of studies that have occurred balancing the effectiveness of IVIg and Plasmapheresis as well as the use of corticosteroids with these. A study was done to determine the therapeutic effects of these therapies and the improvement in patients who had them. While both treatments had positive effects on the patients there was not shown to be much significant difference in patients who had differing doses than the standard (Lin et.al 2021). Depending on the age of the patient, the causative agent of the disease, and other factors can help further determine if calculating different dosage rates would be beneficial.

Complications

Complications such as involvement of cranial nerves, autonomic deficits, dyspnea, and ventilator dependence are often seen in patients who have a higher level of fasting plasma glucose. One way to incorporate supportive care for these patients is to implement glucose monitoring to reduce morbidity and mortality rates (Shang et. al 2021).

One major complication seen in not just Guillain Barre patients but many others throughout hospitalizations is deep vein thrombosis. Patients need to have proper nutritional intake and mobility exercises done. Venodyne boots can be used to improve circulation in the lower extremities. There are specialty braces that can be used on the extremities as well for proper repositioning and help with movement. Medications such as anticoagulants may be given to prevent such complications as well.

When first diagnosed patients will need respiratory support often through a ventilator. Patients should be closely monitored and have suction nearby if needed. Patients may be placed

on cardiac monitors to track function as well as a pulse oximeter to ensure the body is maintaining adequate oxygenation. Additional complications such as GERD, constipation, pain, redness in the eyes, or anxiety can be treated with a variety of medications and supportive measures. Some medications include Benzodiazepines to decrease anxiety, Proton Pump Inhibitors for GERD, Artificial tears for ocular redness or lubrication, laxatives for constipation, and NSAIDs or opioids to decrease pain.

Nursing Care

Nursing care for the patient involves assisting with all procedures and treatments, whether that be placing intravenous lines to run IVIg or plasma exchange, monitoring glucose levels, providing medications, and assessing our patients. Assessment involves completing vital signs, respiratory, cardiac, neuro, and renal most commonly as well as any additional focused assessments needed per specific patients. Patients should be turned and repositioned at least every two hours. Range of motion exercises to improve circulation should be completed as well.

Patients as well as their caregivers will need education provided. This can include how to decrease the risk of infection, the importance of elevating extremities, nutritional support, emotional support groups, and nonpharmacological pain reduction methods. Proper education is a crucial part of nursing care and can further support your patients in a quicker and more successful recovery process.

Conclusion

Guillain-Barre syndrome is treated most commonly with procedures such as IVIg and plasmapheresis. Studies are being conducted to improve the differing rates for those infusions as well as if it is beneficial to include corticosteroids such as methylprednisolone or other medications in the treatment regimen. It's important for patients to also be involved in physical

and occupational therapies to assist with range of motion, improve weakness, and assist them with activities of daily living. Proper education should be provided to both the patient and their caregivers as well as providing around-the-clock care to prevent any complications from occurring. Patients who are provided with complete pharmacological and supportive care measures often have a positive outcome.

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