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Safety/QA/QI Projects

Is Spinal Anesthesia Safe in Patients with a History of Guillain-Barré Syndrome undergoing Orthopedic Surgery?

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Introduction

Guillain-Barré Syndrome (GBS) or Acute Inflammatory Demyelinating Polyneuropathy (AIDP) is a rare autoimmune disorder (CDC estimates that there are between 3000-6000 cases per year) of the peripheral nervous system which manifests itself as bilateral weakness and tingling in the hands and feet. Symptoms may progress to the arms and upper body resulting in an “ascending paralysis”. Two-thirds of patients experience some sort of preceding symptomatic infection (most commonly gastrointestinal from *C. Jejuni*). It is thought that the body’s immune system, while fighting off this initial infection, begins to attack healthy nervous tissue resulting in an acute demyelination of the peripheral nervous system. Because of this, the issue of whether to perform a neuraxial anesthetic technique in a patient with a history of GBS has remained a controversial topic in anesthesia. Many fear that a regional technique may predispose patients to worsening neurological symptoms or recrudescence. However, a causal link between neuraxial anesthesia and worsening of GBS has never been established, save a few case reports; most of the literature on this subject matter has come from the obstetrical anesthesia literature. Because of the numerous positive benefits to performing a regional technique vs general anesthesia (i.e. decreased mortality, PONV, and incidence of DVT), we sought to examine our experience with GBS patients undergoing lower extremity orthopedic procedures to evaluate whether there were any differences in recovery or neurological outcome after administration of a spinal anesthetic.

Materials and Methods

This was an observational, retrospective chart review performed at a single-center, and was approved by the IRB at Hospital for Special Surgery. All the data was collected through a review of medical records. Inclusion criteria consisted of age 18-90, English speaking, planned use of spinal anesthesia and GBS diagnosis. Exclusion criteria included ASA of IV or higher and chronic opioid use.

Using the slicer dicer function in Epic, we identified 166 patients with a history of GBS who underwent surgery at HSS between 2014-2023. Of these, 63 patients underwent spine or upper extremity surgery. This left 103 patients who underwent some type of lower extremity orthopedic procedure. Of these, 18 patients had general anesthesia, 79 patients had spinal or combined spinal/epidural anesthesia, 5 had MAC anesthesia, and 1 had a peripheral nerve block as the primary form of anesthesia. In addition, 67 peripheral nerve blocks were administered for post-operative

pain.

Descriptive statistics for cohort demographics included age, body mass index, gender, race, ethnicity, and ASA. Continuous variables were reported as median and interquartile range, and categorical variables were reported as frequencies and percentage. All statistical analyses were conducted using SAS version 9.4 (SAS Institute, Cary, NC)."

The primary outcome was any change in neurological exam post-operatively, length of stay in the PACU, and length of stay in the hospital. Secondary data included time to completing physical therapy milestones and PONV.

Results/Case Report

The anesthetic records of 103 patients who underwent lower extremity orthopedic surgery were examined. Table one shows the demographic data for our population of patients with a history of GBS. Of the 18 patients who received general anesthesia and the 85 patients who received neuraxial anesthesia, there was no appreciable difference between the groups in terms of neurological outcomes, length of PACU stay, or length of hospital stay (Table 2). Similarly, there was no appreciable difference between the groups in terms of time to achieving Physical Therapy milestones or incidence of post-operative nausea and vomiting which required pharmacological treatment.

Discussion

In this observational, retrospective chart review, a history of GBS did not preclude the use of spinal anesthesia, and in fact, there were no appreciable differences in outcomes in patients with this history undergoing lower extremity orthopedic surgery when given general or spinal anesthesia. It should be noted that this is a very small volume of cases in a single center where the surgical volume is typically over 35,000 annually of which 85% of cases are done with a regional anesthetic technique. Because of this, we looked at all lower extremity surgical cases from all services (I.e. arthroplasty, sports, foot and ankle, trauma, limb lengthening) that were both ambulatory and inpatient in our analysis. As such, there are variable lengths of stay both in the PACU and the hospital, the use of peripheral nerve blocks for post-operative pain, and the number of PT sessions that each patient participated in. Regardless, the results indicate that neuraxial and peripheral nerve blocks are safe and do not present different outcomes for patients with GBS diagnosis.

References

n/a

Disclosures

No

Tables / Images

Table 1. Demographics (n=103)

Age, median [IQR]		66.0 [58.0-74.0]
BMI, median [IQR]		28.9 [25.4-32.4]
Gender*, n (%)	Male	56 (54.4%)
	Female	46 (44.7%)
Race*, n (%)	White or Caucasian	90 (87.4%)
	Black or African American	9 (8.7%)
Ethnicity*, n (%)	Hispanic or Latino	4 (3.9%)
	Not Hispanic or Latino	98 (95.2%)
ASA*, n (%)	1	3 (2.9%)
	2	67 (65.1%)
	3	32 (31.1%)

*Data from patient decline [n=1] and other race [n=3] are not included in table due to limits

Table 2. Length of Stay in PACU and Hospital

GBS event	General	Neuraxial
Yes	1 (5.6%)	4 (4.71%)
No	17 (94.4%)	81 (95.29%)
Length of PACU stay, median [IQR]	2.08 [1.20-2.88]	2.51 [1.50-4.13]
Length of hospital stay, median [IQR]	1.75 [0.11-2.75]	1.16 [0.13-2.72]