ORIGINAL RESEARCH PAPER

Anaesthesiology

KEY WORDS:

GUILLAIN BAREE SYNDROME OUTBREAK: CASE SERIES AND ROLE PLAYED BY ANAESTHESIOLOGISTS IN A TERTIARY CARE HOSPITAL IN WESTERN MAHARASHTRA

Dr Vinaya R. Kulkarni Professor And Head, Bharatratna Atalbihari Vajpayee Medical College, Pune

INTRODUCTION:

GBS was first described in 1859[1] It is an acute inflammatory demyelinating peripheral polyneuropathy usually secondary to immunologic response to viral or bacterial infection usually respiratory or GIT. It causes ascending progressive muscle weakness , autonomic dysfunction, areflexia, pain in large muscles of the leg and back.

Worldwide incidence is 1.1-1.8 cases per 100000/year. Males are more affected than females. Mortality from worldwide, outbreaks have been reported due to GBS is 3-8%,owing to sepsis, pulmonary embolism, ARDS, unexplained cardiac arrest. Of the remaining patients, 5-10% will have some residual disability due to Neurological deficit . 65% will have some persistent minor problems. 15 % recover completely.

It was reported in China. This is the first reported outbreak in Asia i.e. in Pune in January 2025.

The clinical varients of GBS are[2] – AIDP: It affects myelin
AMAN: Acute motor axonal neuropathy. It damages nerve fibers.
AMSAN: Acute motor and sensory axonal neuropathy
MFS: Miller Fisher Syndrome

Clinical Features: Symptoms:
1. Weakness and sensory disturbances in lower limb – Pain, numbness, parasthesia
2. Progressive ascending motor weakness
3. Respiratory muscle weakness and respiratory failure
4. Facial nerve paralysis
5. Bulbar weakness

Signs:
1. Flaccid areflexic paralysis
2. Muscle wasting
3. Autonomic dysfunction
4. Arrhythmias
5. Swing in BP
6. Urinary retention
7. Paralytic Ileus
8. Hyperhidrosis

Role Of Anaesthesiologist In Case Of GBS Patients:
Anaesthesiologist may be required for pain management, ICU care which includes airway management and ventilatory management if required. Anaesthetists may be required for securing intravenous access and lumbar puncture of these patients. Anaesthesiologists may be required to administer anaesthesia if these patients are posted for surgeries like LSCS and post GBS patients

We report 4 cases of Guiilain Barree Syndrome admitted in medicine ward in a teriary care center of Western Maharashtra. These cases were referred for anaesthesia department for difficult anatomy for lumbar puncture .

Case 1: Female patient aged years with mild complaints of diarrhoea and tingling and numbness was admitted for treatment.

Case 2: Female patient aged years with history of diarrhoea followed by unilateral limb weakness

Case 3: Male patient aged years with history of diarrhoea with bilateral weakness of lower limbs

Case 4: Male patient aged years with loose motions with tingling of both lower l

DISCUSSION:

All 4 cases referred to Anaesthesia Department underwent lumbar puncture in wards with following precautions and monitoring

No complications were reported during lumbar puncture.

Precautions recommended for performing lumbar puncture in a GBS patient:
a. In wards
b. In ICU
As far as possible, it should be done with all aseptic precautions with standard vital parameters and oxygen saturation monitoring with preoperative hydration of the patient and routine investigations

Patients with autonomic system dysfunction, lumbar puncture should be done in lateral position and preferably in Intensive care unit.

We were ready with protocol for Anaesthesia which is discussed in this article in case any patient was referred to us for surgery but none of the admitted patient required any type of surgery and anaesthesia.

Posted for surgery. There are no established guidelines to manage these patients if posted for surgery and necessary anaesthesia. The sound knowledge of pathophysiology of this rare neurological disease and its impact on the choice of anaesthetic technique and perioperative anaesthetic challenges may help to form guidelines.

Investigations: which are done in a suspected case of GBS for confirmation of diagnosis are – CSF, NCV

Treatment[3] mainly comprises of symptomatic care which includes adequate nutrition, IVIg, plasmapheresis, thromboembolic prophylaxis and physiotherapy.

GBS has to be differentiated from the conditions with similar clinical presentation such as polyneuritis secondary to vitamin B12 deficiency, abnormal porphyrin metabolism, heavy metal intoxication, toxic neuritis, secondary to agents like nitrofurantoin or insecticides[4].

There are one or two case reports where GBS occurred after spinal or epidural anaesthesia or even after surgery notably orthopedic, abdominal and cardiac surgery.

Preoperative Assessment should consider following points[5]:
1. Lower limb weakness, respiratory muscle weakness, neck and face weakness or areflexia
2. Bladder dysfunction

3. Bowel dysfunction
4. Breathing difficulty
5. Autonomic system dysfunction
6. Serum electrolytes like serum potassium
7. Airway compromise
8. High risk for Aspiration
9. Increased risk of DVT
10. Neuropathic pain (40-50%)
11. Venous thromboembolism

Mostly patients will come for vaginal delivery or LSCS[6] or any other surgery.

GBS has no effect on uterine contraction or cervical dilation hence these patients can be delivered vaginally. However as the ability to bear down will be weakened, vacuum extraction or surgical intervention in the form of LSCS may be required.

Goals Of Anaesthesia Should Be :
1. Minimise aspiration risk (consider prophylaxis, RSI)
2. Maximize respiratory function. (Avoid NMDs or reduced dose of NDMR and full reversal)
3. Care of secretions after neostigmine during reversal of GA
4. Postoperative adequate pain management
5. Maintain hemodynamic stability as both intubation and extubation can cause hemodynamic instability

The role of anaesthesia for GBS patients is crucial, requiring careful consideration due to the potential for respiratory compromise and muscle weakness. General anaesthesia will be preferred over regional anaesthesia to avoid further neurological damage while close monitoring of respiratory function is essential throughout the procedure.

Considering the pathophysiology, any surgical procedure on GBS patient is considered high risk and requires specialized anaesthetic management. General anaesthesia is preferred over regional anaesthesia as it allows for better control of airway management and ventilation which is critical for GBS patients who may have weakened respiratory muscles.

Continuous monitoring of vital signs including respiratory function is essential throughout surgery and postoperative period to detect any signs of respiratory distress.

Anaesthesia plan should be individualised as per individual patients neurological status, the severity of their GBS symptoms and type of surgery. Close collaboration with a neurologist is crucial to assess the patients condition and guide the anaesthetic management.

Concerns With Regional Anaesthesia:
1. In acute phase of GBS, neurological deficit may get worsened by further compromising nerve function.
2. Local anaesthetic drugs hypersensitivity
3. Difficulty with nerve block placement: Due to muscle weakness , finding the appropriate nerve location for a regional block can be difficult.

With General Anaesthesia:
1. Airway compromise
2. Sensitive to non depolarising muscle relaxants

Preoperative Assessment: Key Points Are:
1. PFTs
2. Muscle strength : NCV, EMG
3. CNS, PNS, ANS examination

Airway Assessment:
Intraoperative Management: of respiratory system with minimum use of muscle relaxants

Postoperative Care:
1. Close monitoring
2. Look for respiratory complications

General Anaesthesia Protocol:
1. High risk consent if required
2. Aspiration consent
3. Postoperative ventilator consent
4. Difficult intubation consent
5. Ventilator and ICU consent

Premedication:
Drugs used: Injection glycopyrrolate 5 ug/kg intravenous
Injection ondansetron
Injection midazolam

Rapid Sequence Induction :
- No succinylcholine to ne used due to risk of hyperkalemia
- Portex endotracheal intubation with use of rocuronium with use of VDL
- Avoidance of pressor response with use of lignocaine

Maintenance of Anaesthesia: with sevoflurane with oxygen and air with MAC 0.9 with maintenance of normocarbia with ETCO2 and muscle relaxation monitoring with NMT. Avoid non depolarising muscle relaxants. Standard ASA monitoring should be done. Intravenous fluids should be given as per requirement of the surgery. DVT stockings can be used if prolonged procedure.

Extubation can be done when fully recovered or once the bulbar reflexes have returned.

Postoperative Management Principles:
1. Provision of adequate analgesia
2. Oxygen supplementation by ventimask 4-6 liters /min
3. Vitals monitoring

HDU: vitals monitoring should be done with adequate analgesia
ICU: As per clinical assessment and ABG

Perioperative risks for anaesthesia are respiratory failure and cardiovascular collapse and postoperative neurodeficit.

The Anaesthesia Protocol Which We Suggest :
Investigations:
Routine:
1. CBC
2. Coagulation Profile
3. CX ray (PA view)
4. ECG
5. Serum Electrolytes
6. Liver function tests
7. Renal function tests
8. Blood sugar level (R)
9. Urine: routine and microscopic

Special Investigations:
1. 2 D Echo
2. NCV
3. EMG
4. CSF
5. Stool Examination

Regional anaesthesia needs to be avoided as far as possible in view of triggering GBS as mentioned in literature[7,8].

Preoperatively ,
1. Patient may be ventilated in ICU
2. Assess bulbar and ventilatory function to predict the need

Indications For Intubation And Ventilation :
1. Vital Capacity < 20 ml/kg
2. Maximum Inspiratory Capacity < 30 cm of water

3. Maximum Expiratory capacity < 40 cm of water
4. Decrease of > 30 % in vital capacity, MIP or MEP

Treatment :
Intravenous immunoglobulin 0.4 mg/kg/day for 5-6 days

Plasmapheresis upto 5 exchanges of 250 ml/kg of plasma with 4.5 % human albumin solution

CSF filtration (rarely performed)

We report 4 cases of Guiilain Barree Syndrome admitted in medicine ward in a teriary care center of Western Maharashtra. These cases were referred for anaesthesia department for difficult anatomy for lumbar puncture .

Case 1: Female patient aged22 years with mild complaints of diarrhoea and tingling and numbness was admitted for treatment.

Case 2: Female patient aged years 25 with history of diarrhoea followed by unilateral limb weakness

Case 3: Male patient aged years 55 with history of diarrhoea with bilateral weakness of lower limbs

Case 4: Male patient aged years 50 with loose motions with tingling of both lower limbs

DISCUSSION:
All 4 cases referred to Anaesthesia Department underwent lumbar puncture in wards with following precautions and monitoring

No complications were reported during lumbar puncture.

Precautions Recommended For Performing Lumbar Puncture In A GBS Patient:

b. In wards

b. In ICU

As far as possible, it should be done with all aseptic precautions with standard vital parameters and oxygen saturation monitoring with preoperative hydration of the patient and routine investigations

Patients with autonomic system dysfunction, lumbar puncture should be done in lateral position and preferably in Intensive care unit.

We were ready with protocol for Anaesthesia which is discussed in this article in case any patient was referred to us for surgery but none of the admitted patient required any type of surgery and anaesthesia.

Pregnancy[6] with Guillain Barre Syndrome is out of scope of this discussion and a separate topic itself.

CONCLUSION:
- All patients presented to our center had mild to moderate variety of GBS
- All patients were referred for lumbar puncture for obtaining CSF as a diagnostic tool
- All patients received standard treatment as per institute protocol
- All patients recovered fully and were discharged within one weak of admission

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