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A RARE CASE SERIES OF GUILLAIN BARRE SYNDROME IN ANTENATAL WOMEN

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ABSTRACT Guillain Barre syndrome (GBS) in pregnancy can cause maternal mortality due to respiratory failure. During pregnancy, its incidence is estimated to be between 1.2 to 1.9 cases per 100,000 pregnancies. It can occur at any trimester, with a higher risk observed in the third trimester and early postpartum period. There is no risk of preterm birth or fetal malformations . Here we presenting a case series of pregnant women with the complaints, suspecting GB syndrome and with pregnancy outcome of mother and the baby.

KEYWORDS : Guillian Barre Syndrome, Acute inflammatory demyelinating polyradiculopathy, pregnancy, Antepartum and Postpartum period, Immunoglobulins, Plasmaparesis.

INTRODUCTION

Guillain-Barre syndrome (GBS) is an autoimmune disorder assoscaited with rapid onset muscle weakness and paralysis due to immune-mediated damage to the peripheral nerves. It can occur during pregnancy, posing unique challenges for both maternal and fetal health. The most common form is acute inflammatory demyelinating polyradiculoneuropathy present as progressive motor weakness,which starts from the legs and involve proximally. Weakness occurs over hours to a few days with tingling dysesthesias in the extremities. The legs are usually more affected than the arms, and facial diaparesis is seen in 50% of affected individuals. The lower cranial nerves are also involved, causing bulbar weakness with difficulty in swallowing and breathing. GBS does not typically affect the uterus directly. It is a neurological condition that affects muscle function, primarily in the limbs and sometimes the respiratory muscles. Therefore, it does not influence fetal development or the uterus in the same way as conditions like placental disorders or uterine infections might. Management focuses on the neurological symptoms and reducing the risk of transmission to the newborn during delivery. Symptoms will be peak for few days or weeks then plateau before resolving. About two-thirds have autonomic symptoms, such as sinus tachycardia,cardiac arrythmias, bladder dysfunction,difficulty in breathing and swallowing. Advancing symptoms may compromise respiration and vital organ functions. Here are some key considerations regarding trigger factors for GBS in pregnancy:

1. **Infectious Agents:**

- **Campylobacter Jejuni:** This bacterium is one of the most commonly identified triggers for GBS worldwide. Infection with Campylobacter jejuni, often through contaminated food or water, can lead to an immune response that cross-reacts with peripheral nerve components, initiating the autoimmune process seen in GBS.
- **Cytomegalovirus (CMV):** CMV infection has also been associated with GBS. It is a herpes virus family causing mild flu-like illness to more severe complications, including neurological disorders like GBS.
- **Epstein-Barr Virus (EBV):** Another herpesvirus, EBV infection has been linked to cases of GBS. EBV is responsible for infectious mononucleosis ("mono"), and its role in triggering autoimmune responses, including GBS, is under investigation.
- **Zika Virus:** Although primarily known for its association with congenital abnormalities such as microcephaly, Zika virus infection has been implicated in triggering GBS-like symptoms in affected individuals, including pregnant women.

2. **Other Trigger Factors:**

- **Vaccinations:** While rare, certain vaccinations have been suggested as potential triggers for GBS. However, the risk associated with vaccinations is generally considered low compared to the risk of developing GBS following natural infections.
- **Surgery or Trauma:** Any significant surgical procedure or trauma could potentially trigger an immune response that leads to GBS, although this is less commonly reported compared to infections.
- **Other Factors:** In some cases, GBS may develop spontaneously without a clear preceding trigger, suggesting that other factors, including genetic predisposition and environmental factors, may also play a role.

Pregnancy-Specific Considerations:

- **Hormonal Changes:** Pregnancy involves significant hormonal changes that can influence immune function. Alterations in hormone levels, particularly estrogen and progesterone, may potentially affect the immune response and contribute to the development or exacerbation of autoimmune conditions like GBS.
- **Immune Modulation:** The immune system undergoes adaptations during pregnancy to accommodate the developing fetus. These changes may alter susceptibility to infections or autoimmune responses, although the precise mechanisms in relation to GBS are not well-defined.

Pathophysiology Of GB Syndrome In Pregnancy:

The pathophysiology of Guillain-Barré syndrome (GBS) involves an autoimmune response targeting the peripheral nervous system, leading to inflammation, demyelination, and/or axonal damage. This process is believed to be triggered by molecular mimicry, where antibodies generated against an antecedent infection cross-react with components of peripheral nerves.While the exact mechanisms in pregnancy-related GBS are not fully elucidated, the general pathophysiology remains consistent with the broader understanding of GBS.

Immune Activation and Molecular Mimicry: GBS often follows an infectious illness, where pathogens such as Campylobacter jejuni, cytomegalovirus (CMV), Epstein-Barr virus (EBV), or Zika virus have been implicated as triggering factors. In susceptible individuals, the immune response to these infections produces antibodies that recognize and attack not only the infecting agent but also antigens present on peripheral nerves. This phenomenon is known as molecular mimicry, where similarities between microbial antigens and peripheral nerve components lead to immune-mediated damage.

Inflammatory Response: Following the triggering infection, activated immune cells, T lymphocytes and macrophages, infiltrates peripheral nerves. These cells release pro-inflammatory cytokines and other mediators that promote inflammation and further recruit immune cells to the site of nerve injury. This inflammatory cascade cause breakdown of blood-nerve barrier, causing entry of immune cells and antibodies into the peripheral nerves.

Demyelination and Axonal Damage: In GBS, the autoimmune attacks the myelin sheath of peripheral nerves, although direct axonal injury can also occur in some cases. Demyelination refers to the stripping away of the protective myelin layer that normally insulates nerve fibers and facilitates rapid signal transmission.Without myelin, nerve conduction is slowed or blocked, which cause muscle weakness, sensory deficits, and loss of reflexes seen in GBS. In more severe cases, the immune response may also damage the axon itself, disrupting nerve function and causing more profound neurological deficits.

Variability in Pathophysiology: The specific patterns and extent of

nerve damage in GBS can vary widely among individuals, influencing the clinical presentation and severity of symptoms. Some patients experience predominantly demyelinating forms of GBS, such as acute inflammatory demyelinating polyneuropathy (AIDP), while others may have axonal forms like acute motor axonal neuropathy (AMAN) or acute motor-sensory axonal neuropathy (AMSAN). The distinction between these subtypes is important clinically, as it can impact treatment strategies and prognosis.

Pregnancy-Specific Considerations: In pregnancy-related GBS cases, the pathophysiology is thought to occur similarly to non-pregnant individuals. However, physiological changes during pregnancy, such as alterations in immune function and hormonal milieu, may influence the susceptibility to GBS or the severity of the autoimmune response. Additionally, the presence of GBS during pregnancy requires careful consideration of maternal and fetal well-being, with management strategies tailored to minimize risks to both .

Diagnosis and Initial Evaluation:

- **Clinical Assessment:** GBS should be suspected based on clinical presentation, which typically includes rapid progressive muscle weakness, loss of deep tendon reflexes, and often sensory disturbances or cranial nerve involvement.
- **Diagnostic Tests:** Electrodiagnostic studies such as nerve conduction studies (NCS) and electromyography (EMG) are essential to confirm the diagnosis by demonstrating characteristic findings such as prolonged distal latencies, conduction blocks. Cerebrospinal fluid (CSF) analysis typically shows elevated protein levels without pleocytosis (albuminocytologic dissociation).
- **Imaging:** MRI may be used to rule out other neurological conditions mimicking GBS.

Monitoring and Supportive Care:

- **Respiratory Monitoring:** There is a risk of respiratory muscle weakness,hence monitoring is crucial. This may involve measuring vital capacity, monitoring blood gases, and early consideration of respiratory support if indicated.
- **Autonomic Dysfunction:** Monitoring for signs of autonomic dysfunction, such as fluctuations in blood pressure, heart rate variability, or temperature dysregulation, is important.

Immunomodulatory Therapy:

- **Intravenous Immunoglobulin (IVIg):** IVIg is the first-line treatment for GBS and is considered safe during pregnancy. It works by modulating the immune response and reducing inflammation. The standard dose is 2 g/kg administered over several days.
- **Plasma Exchange (PLEX):** PLEX may be an alternative or adjunctive therapy if IVIg is contraindicated or ineffective. PLEX involves removing plasma from the patient and replacing it with plasma or albumin. This process helps remove harmful antibodies and inflammatory mediators.

Complications Management

- **Pain Management:** GBS can cause neuropathic pain, which should be managed appropriately with medications such as gabapentin, pregabalin, or opioids as needed.
- **Thromboprophylaxis:** Given the risk of immobilization and the hypercoagulable state of pregnancy, thromboprophylaxis with low molecular weight heparin may be considered to prevent deep vein thrombosis (DVT) in severely affected patients.
- **Nutritional Support:** Adequate nutrition, including early enteral feeding if oral intake is compromised, is important to support recovery and prevent complications such as aspiration pneumonia.

Maternal-Fetal Considerations:

- **Delivery Timing:** The timing of delivery should be based on maternal clinical status, gestational age, and fetal well-being. In stable cases without significant respiratory compromise, delivery can often be managed conservatively until term.
- **Fetal Monitoring:** Continuous fetal monitoring during acute management is essential to detect signs of fetal distress, particularly during periods of maternal respiratory compromise.

Long-term Rehabilitation and Follow-up:

- **Rehabilitation:** Once stabilized, patients with GBS benefit from rehabilitation including physiotherapy, occupational therapy, and speech therapy as needed to optimize functional recovery.
- **Long-term Follow-up:** Regular neurological follow-up is recommended to monitor for residual deficits, late neurological sequelae, or potential relapses. Most patients experience significant recovery within weeks to months, but some may require ongoing support.

Psychological Support

- **Patient and Family Counseling:** GBS can have a profound impact on patients and their families emotionally and psychologically. Providing adequate support, information, and counseling throughout the diagnosis, treatment, and recovery phases is crucial.

Case Report- 1

We discuss a case of 24yrs old primigravida with gestational age of 32wks booked and immunised in Ponneri government hospital for the present pregnancy k/c/o hypothyroidism on T. Thyronorm 50mcg, admitted in SBMCH hospital for first visit with c/o pain and sudden onset of paraesthesia of bilateral lower limbs since 1 day associated with pins and needle like sensations and then she developed rapidly progressive paralysis and also had difficulty in sitting and standing. H/o similar complaints 3 weeks back and was diagnosed as hypocalcemia in RSRM govt hospital and was treated. On examination, vitals are stable, power of 4/5 in upper limbs, 3/5 in lower limbs with hypotonia and areflexia in lower limbs. All basic investigations done along with sr.electrolytes and were normal. Serological tests were negative. Lumbar puncture done cerebrospinal fluid revealed raised protein of 8.4 g/L with normal WBC count confirming the diagnosis. Nerve conduction studies shows feature of acute inflammatory demyelinating polyneuropathy.The patient was treated in the form of physiotherapy and improved 6 days later. Patient was followed up throughout the antenatal period, serial growth scan done, for fetal growth. At term around 38wks 2days patient had induced with foleys and had normal vaginal delivery. Patient was discharged on PND-2, On PND-3, the patient came with complaints of weakness all the four limbs, more in lower limbs and also difficulty with power of 3/5 in upper limbs, 2/5 in lower limbs, hypotonia, loss of lower limb deep tendon reflexes, with no sensations. Serum creatinine, serum calcium, serum magnesium, and creatinine phosphokinase-MB remained within normal limits. Electrocardiogram revealed sinus tachycardia. MRI of brain and spinal cord done normal. Neurology opinion obtained and treated with 5 cycles of IV Immunoglobulin therapy 400mg/kg and underwent physiotherapy daily patient improved and was discharged after 3 weeks of hospital stay with power of 5/5 in upper limbs, 4/5 in lower limbs.

Case Report-2

Here is a case of 35years ,primigravida with 36weeks of gestation came with complaints of rapid onset of pin like sensations and pain in her lower limbs since 2 days and also complaints of weakness of lower limbs since 1 day which rapidly extended to upper limbs and face, causing slurred speech.On examination, vitals are stable, power of 3/5 in upper limbs, 2/5 in lower limbs with hypotonia and areflexia in lower limbs. Patient is a known case of overt diabetes controlled with insulin. Medicine opinion obtained i/v/o overt diabetes on insulin for uncontrolled sugars and adviced followed. Neurology opinion obtained and adviced physiotherapy and speech therapy. After few hours patient developed shortness of breath (without respiratory insufficiency) and difficulty swallowing was observed, patient was shifted to ICU and ventilated with CPAP and was catheterised for urine output to rule out bladder dysfunction. After patient stabilised, (MRI) of brain and spinal cord done- normal. Evaluation of Cerebrospinal fluid (CSF) showed elevated protein levels with 7.8g/L with a normal white blood cell count. Electromyography showed demyelination, confirming the diagnosis of acute inflammatory demyelinating polyneuropathy, the most common variant of GBS. Continuous ECG monitoring and vitals monitoring, serial NST monitoring done and started with a five days of treatment of IVIG (with a daily dosage of 400 mg/kg). After 3 days CPAP weaned off and seven days later patient improved with physiotherapy and speech therapy. After 2 weeks she was taken up for emergency caesarean section due to fetal distress,delivered female baby of wt 3.23kgs with APGAR score of 8/10,9/10. Postoperatively on POD-1, patient complaint of abdominal distension and was diagnosed as paralytic ileus, and treated with laxatives. Postpartum period shows no further signs of Guillain barre syndrome. After 2weeks patient has improved with the power of 3/5 in lower limbs and 4/5 in lower limbs through physiotheraphy.

Managing anesthesia and analgesia in patients with Guillain-Barré

syndrome (GBS) during pregnancy requires careful consideration due to the potential risks associated with the neurological condition and the physiological changes of pregnancy. Here's an overview of the anesthesia and analgesia considerations for pregnant women with GBS:

1. General Considerations:

- **Multidisciplinary Approach:** Collaboration between neurologists, obstetricians, anesthesiologists, and other healthcare providers is essential to develop a tailored management plan.
- **Time of Procedures:** Whenever possible, elective procedures should be delayed until after the acute phase of GBS has resolved to minimize risks of exacerbating neurological symptoms.

2. Anesthesia Considerations:

- **Regional Anesthesia:** Regional techniques such as spinal or epidural anesthesia are generally preferred over general anesthesia for cesarean section or labor analgesia in patients with GBS. These techniques avoid the systemic effects of general anesthetics, which can depress respiratory function and exacerbate neuromuscular weakness.
- **Monitoring:** Close monitoring of respiratory function, vital signs, and neurological status is crucial during regional anesthesia to promptly identify any signs of respiratory compromise or neurological deterioration.
- **Dose Adjustment:** Patients with GBS may exhibit altered sensitivity to local anesthetics due to peripheral nerve involvement. Careful titration of anesthesia doses based on individual response and regular assessment of block level are important.

3. Analgesia Considerations:

- **Pain Management:** Neuropathic pain is common in GBS and may require multimodal analgesia approaches including NSAIDs, opioids, and adjuvant medications (e.g., gabapentin, pregabalin).
- **Avoidance of Certain Medications:** Some medications, such as muscle relaxants or certain opioids (e.g., fentanyl, morphine), may exacerbate respiratory depression in patients with compromised respiratory function due to GBS.

4. Special Considerations in Pregnancy:

- **Physiological Changes:** Pregnancy alters pharmacokinetics and pharmacodynamics, affecting drug metabolism and distribution. Close monitoring and adjustment of drug doses are necessary.
- **Fetal Monitoring:** Continuous fetal monitoring during procedures or analgesic administration is important to ensure fetal well-being, particularly if maternal respiratory compromise is a concern.

5. Communication and Planning:

- **Informed Consent:** Clear communication with the patient and her family regarding risks, benefits, and alternatives of anesthesia and analgesia options is crucial.
- **Preoperative Assessment:** A thorough preoperative assessment, including neurological evaluation and assessment of respiratory function, helps guide anesthesia planning and management strategies.

6. Postoperative Care:

- **Recovery Monitoring:** Close monitoring in the immediate postoperative period for signs of respiratory compromise or neurological deterioration is essential.
- **Pain Management in Recovery:** Adequate pain management postoperatively is important to optimize recovery and minimize discomfort, considering the patient's neurological status and any residual symptoms of GBS.

CONCLUSION

Guillain-Barré syndrome in pregnancy presents unique clinical challenges due to its rarity and potential impact on both maternal and fetal health. Early recognition, prompt diagnosis, and multidisciplinary management are essential for optimizing outcomes. Advances in supportive care and immunomodulatory therapies continue to improve prognosis, underscoring the importance of collaborative care between neurologists, obstetricians, and other specialists. Further research is needed to enhance our understanding of GBS pathophysiology and refine treatment strategies tailored to pregnant women, ensuring the best possible outcomes for both mother and baby. Identifying trigger factors for GBS in pregnancy remains challenging due to the rarity of the condition and the complex interplay of factors involved in its pathogenesis. Further research is needed to clarify the specific mechanisms by which pregnancy-related factors may influence the onset and course of GBS in affected individuals. Management of Guillain-Barré syndrome in pregnancy requires a coordinated and multidisciplinary approach to ensure timely diagnosis, effective treatment, and supportive care tailored to the unique needs of both the mother and fetus. Close monitoring, early intervention with immunomodulatory therapies, and comprehensive supportive care are key principles in optimizing outcomes for pregnant women affected by this rare but potentially serious neurological condition.By integrating clinical expertise, supportive care, and tailored therapies, healthcare providers can effectively navigate the complexities of GBS in pregnancy, striving to achieve optimal outcomes for all involved.