New onset of Guillain-Barré Syndrome in postpartum period following caesarean section under spinal anaesthesia

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Background

Guillain-Barré syndrome (GBS) is a rare autoimmune disorder. GBS is normally caused by demyelination and axonal degeneration resulting in acute polyradiculoneuropathy. The incidence of GBS has been documented as 1.2 – 1.9 per 100,000 population[1] with an incidence of 6-24/100,000 cases reported in pregnancy[2] and carries a higher maternal morbidity and mortality[3].

GBS usually has an acute onset of symmetrical radiculopathy and occurs more often in the first 2 weeks of puerperium[4]. The common presentation of GBS is progressive motor weakness and loss of reflexes[5].

Case Presentation

A 36-year-old Pakistani woman, para 3 who had an elective caesarean section 19 days ago presented to the emergency unit in Cork University Maternity Hospital complaining of bilateral leg weakness and unsteady gait one week post-surgery. She first noticed difficulty climbing stairs, having to pull herself up with the bannisters, lifting either of her legs and an unsteady gait which does not deviate to either side. She put it all down to general weakness and fatigue post-surgery. She also complained of slight numbness to the sole of her feet but otherwise no paraesthesia or sensory problem. She did not complain of urinary or bowel problems.

On physical examination, both her lower extremities have normal tone, 4/5 of hip flexion, 5/5 of knee and ankle reflex, 3/5 motor power, normal sensation but hypo-reflexive on both legs. Her gait appeared to be slow, cautious and unsteady with no deviation. She was unable to perform heel-toe gait.

Her past medical history was significant for gestational diabetes in all her pregnancies and had 3 caesarean sections for her past surgical history.

She was first reviewed by anaesthetic registrar who requested for neurological review as it was unlikely due to spinal anaesthesia effect.

Neurology registrar on call performed a thorough neurological examination with the differential diagnosis of acute myopathy, peripheral neuropathy or lumbosacral pathology. An urgent MRI of the lumbosacral spine was booked to rule out any collection post spinal anaesthesia which showed normal study. The patient was booked for urgent nerve conduction study as outpatient basis 4 days later which showed findings consistent with Guillain-Barré syndrome.
The patient was admitted to the maternity hospital under the neurology team with the plan of management: electrocardiogram; lumbar puncture for cell count, protein and glucose; anti-ganglioside antibodies pre intravenous immunoglobulin (IVIG) treatment.

The neurology team liaised with the pharmacy in regards to breastfeeding before commencing IVIG treatment. The patient received IVIG of 0.4g/kg for 5 days and was also referred for physiotherapy.

The only complaint during the treatment was frontal headache on day 3 of IVIG which was deemed as common side effect from the neurology team.

The patient completed the 5 days course of IVIG and her symptoms improved. She was seen by the neurology consultant and was then discharged from the hospital for outpatient clinic appointment.

Discussion

Guillain-Barré syndrome is an immune mediated peripheral neuropathy. The exact aetiology is unclear but two thirds of the patients usually complained of a history of acute infection either respiratory tract (40%) or gastrointestinal tract (20%) 4 weeks prior to the clinical presentation[6,7]. Implicated infectious agents include Cytomegalovirus and mycobacterium jejuni[8,9]. The prodromal infection will trigger an abnormal immune response to axolemma and Schwann cell antigens, causing demyelination and hence damaging the peripheral nerves in conduction system.

Guillain-Barré syndrome does not influence the nerve conduction of the uterine smooth muscles during labour. i.e. uterine contraction and cervical dilation, hence vaginal delivery is permissible[10]. However, due to the weakened of the ability of bearing down, assisted vaginal delivery such as vacuum extraction may be required[11]. Our case patient required caesarean section due to her past obstetric history of 2 previous caesarean sections.

GBS can occur at any stage of the pregnancy but the incidence is increased in the third trimester as well as postpartum period, specifically 2 weeks postpartum due to increase in type IV hypersensitivity. Da Silva et al has reported a case in which GBS was diagnosed at 15 weeks of gestation and the symptoms worsened in postpartum period[12].

GBS is commonly presented as progressive symmetrical weakness starting from lower extremities in ascending pattern, areflexia, paraesthesia or neuropathic pain. Laboratory and electrophysiological investigation for the diagnosis of GBS is often non-specific. Lumbar puncture is performed to obtain cerebrospinal fluid for electrolytes, protein and glucose content[5]. Antibody screening, electrocardiogram as well as nerve conduction studies[13] are included to diagnose GBS. Magnetic resonance imaging has also been used for diagnosis purposes even though the result obtained might be non-specific[14].

In our case, our patient had a normal ECG which showed a sinus rhythm with normal QRS complex, no ST elevation or depression, no bundle bunch block pattern and no atrioventricular block seen. Her anti-neutrophil cytoplasmic antibody was negative and all her auto antibody screening (anti-nuclear, anti-mitochondrial, anti-smooth muscle and anti-gastric parietal cell) came back as negative. Her albumin was 39g/L, cytokine kinase of 600U/L, C - reactive protein was 4.7mg/L, IgG of 13.31g/L, IgA of 2.56g/L and IgM of 1.23g/L. Her lumbar puncture result was: cerebrospinal fluid (CSF) with raised total protein of 1101mg/L and glucose of 4.5mmol/L. Her CSF was clear and colourless appearance and the microscopy and culture showed no growth after 48 hours of incubation. Her MRI of lumbar spine degenerative L5/S1 intervertebral disc with small focal left paracentral disc protrusion and annular tear but no significant central canal stenosis or nerve root impingement. There were no epidural collection or collection in the overlying paraspinal muscles or subcutaneous tissues.

The management of GBS is the same for both pregnant and non-pregnant patients which comprises of physiotherapy, symptomatic care, thromboprophylaxis and close monitoring of heart rate, respiratory rate, temperature, blood pressure as well as fluid and electrolyte balance.

High dose of intravenous immunoglobulin of 400mg/kg can be administered for 5 days or immunomodulation with plasmapheresis whichever required[15]. Treatment with IVIG is well documented in pregnancy and has been found to be effective for either pregnant or non-pregnant patients[10] with a success rate of 70-80%[16]. Plasmapheresis can also be used to treat symptoms within 7 days of onset or patients requiring respiratory support[17] and this treatment is mainly reserved for extremely severe cases. 25-30% of non-pregnant patients require ventilator support[1] and appears to be worse with gravid uterus in pregnancy largely due to the decreased lung capacity and splinting of the diaphragm in pregnant patients. As our patient was postpartum with mild symptoms, she only required IVIG solely and she responded well to the treatment. She was discharged home with a neurology outpatient clinic follow-up for her medical condition.

Conclusion

In conclusion, Guillain-Barré syndrome is a very rare disorder seen in obstetrics field. A high index of suspicion for musculoskeletal weakness or paraesthesia from obstetrician is needed for early diagnosis and a multidisciplinary approach is warranted for a better outcome and care.

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