Guillain-Barre Syndrome in a Pregnant-Live-Related ABO-Incompatible Renal Allograft Recipient

Sir,

Guillain-Barre syndrome (GBS) is an acute ascending form of polyradiculoneuropathy characterized by symmetrical flaccid areflexic motor paralysis with/without sensory disturbances. GBS is extremely rare after solid organ transplantation (SOT), probably because of their immunocompromised state.[1] GBS presenting after an ABO-incompatible (ABOi) transplant and during pregnancy has never been reported in past among SOT recipients. We herein report a case of GBS diagnosed during pregnancy in an ABOi renal transplant (RT) recipient who recovered completely with timely management.

A 27-year-old primigravida with 20 weeks of amenorrhoea who had received a live related (one haplomatch) ABOi RT in April 2014, presented with symmetric weakness of both lower limbs with progression to upper limbs over 5 days. She also had significant sensory symptoms like tingling and numbness of both lower limbs. There was no bowel and bladder involvement. She received the tetanus toxoid (TT) vaccine about 4 weeks prior to her illness. She denied fever, prodromal illness, cough or diarrhoea. She was initially on triple immunosuppressive therapy with prednisolone, mycophenolate mofetil (MMF) and tacrolimus; she was shifted to azathioprine 9 months before because of planned pregnancy and was having normal graft function. Her basic kidney disease was presumed as chronic interstitial nephritis. She received a single dose of rituximab (375 mg/m^2), 4 sessions of plasma exchange (PLEX) and intravenous immunoglobulins (IVIG) as desensitization protocol and low dose anti-thymocyte globulin (ATG-1 mg/kg) as induction at the time of RT with target anti-ABO titer of 1:8 (baseline titer 1:64). Her post-RT period was uneventful until recent past.

On examination, she had severe loss of muscle power in both lower and upper limbs (2/5 and 3/5 respectively). There was generalized areflexia and sensory examination was normal. Plantar reflexes were flexor and cranial nerves were intact. The routine laboratory evaluation, haematology and biochemical tests, and urine evaluation didn't reveal any abnormality. Serology and/or nucleic acid tests for hepatitis B and C, human immunodeficiency virus (HIV), cytomegalovirus (CMV), Epstein-Barr virus (EBV), and anti-nuclear antibody (ANA) were negative. Nerve conduction studies (NCS) confirmed the diagnosis of acute inflammatory demyelinating polyradiculoneuropathy (AIDP), which is the most common variant of GBS. Cerebrospinal fluid (CSF) analysis was not done. Whole blood tacrolimus trough level was optimal.

She was treated with 5 sessions of PLEX (with human albumin as replacement fluid) on alternate days judiciously as she was pregnant, with significant improvement in her neurological status within 10 days. Physiotherapy and supportive care were continued. Immunosuppression was not changed. She was discharged after 2 weeks with completely recovered motor function, but her sensory symptoms persisted for almost 4 weeks after PLEX. At 6 months of follow up, she was having normal renal allograft function without any neurological symptoms and had delivered a baby at full term.

GBS occurs relatively frequently in patients after bone marrow transplantation but has been a rare complication in SOT.[1] In general population, almost two-third cases of GBS are preceded by gastrointestinal or respiratory infection; important microbial triggers include C. jejuni, CMV, EBV, Varicella, influenza virus, HIV, and Mycoplasma. Other non-infectious precipitating factors include autoimmune disorders (systemic lupus erythematosus, chronic active hepatitis, hypothyroidism, sarcoidosis, Wegener's granulomatosis, and ulcerative colitis), vaccinations (influenza A, rabies, polio, tetanus toxoid, meningococcal and pneumococcal vaccines), drugs, pregnancy, surgery and malignancy. Almost all cases of GBS in SOT have been associated with CMV before or at time of onset and the majority of cases have occurred within 6 months to 1 year of SOT.[1] Recently, Ostman *et al*. have reviewed 17 cases of GBS in RT patients and identified CMV as the most common trigger for GBS in the post-RT setting. Most cases were males (81%) and deceased donor RTs (87%). The time between RT and onset of symptoms ranged from 2 days to 10 years. GBS was associated with antecedent viral (CMV-12; EBV-1) or diarrhoeal (2) illness while two cases were attributed to calcineurin inhibitor (CNI) use. All patients recovered fully or partially after treatment.[2] We could not identify antecedent infection in our case. Few case reports have noted pathogenic roles of rituximab, ATG and CNIs in triggering GBS both in non-transplant and post-SOT patients.[3-5] CNIs probably could not have played a role in GBS occurrence in our case as the dose of tacrolimus used was minimal, taking it for last several years and was continued post-GBS without triggering a relapse; also rituximab and ATG because of their remote exposure might not have played a role. Pregnancy itself may trigger GBS, especially during the third trimester and post-partum period may be because of imbalance inactivity of Th1, Th2 and Treg cells.[6] Though there is little evidence to support a causal association with most vaccines including TT vaccination, their effect on the immune system may be associated with subsequent GBS.[7]

CSF study may reveal albuminocytologic dissociation (isolated elevation in CSF protein level with normal white blood cell count) in most patients with GBS especially after the first week of onset of symptoms. Electrodiagnostic studies (NCS and electromyography) are especially useful for confirming the diagnosis, prognostication and to classify the variants of GBS. AIDP is characterized by features of demyelination like decreased motor nerve conduction velocity, prolonged distal motor latency, increased F wave latency, absent H reflexes, conduction blocks, and temporal dispersion. Axonal forms of GBS are supported by decreased distal motor and/or sensory amplitudes. Although PLEX and IVIG are equally effective therapies in the general population, optimal therapy for GBS in SOT is still unknown.[1] Antimicrobial/antiviral agents and reduction of immunosuppression are required in postinfectious cases.

Our case is unique in several aspects like she is a recipient of live related ABOi RT, GBS was diagnosed during pregnancy, with no evidence of antecedent infection, occurring more than five years of RT, successfully managed with PLEX, recovered completely to have a baby at full term and is maintaining a stable graft function. Pregnancy and vaccination might have played a role in precipitating GBS in our patient. A high index of suspicion, early and aggressive therapy are important for rapid recovery and to prevent adverse sequela as the clinical course can be more severe in a SOT recipient.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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References

1. El-Sabrout RA, Radovancevic B, Ankoma-Sey V, Van Buren CT. Guillain-Barré syndrome after solid organ transplantation. Transplantation 2001;71:1311-6.
2. Ostman C, Chacko B. Guillain-Barré syndrome post renal transplant: A systematic review. Transpl Infect Dis 2019;21:e13021.
3. Jaso R, Sierra M, Calleja J, Valero C, Pascual J. Guillain-Barre syndrome after rituximab in a patient with idiopathic thrombocytopenic purpura: A causal association? J Neurol 2010;257:488-9.
4. Kaya B, Davies CE, Oakervee HE, Silver NC, Gawler J, Cavenagh JD. Guillain-Barré syndrome precipitated by the use of antilymphocyte globulin in the treatment of severe aplastic anaemia. J Clin Pathol 2005;58:994-5.
5. Palmer BF, Toto RD. Severe neurologic toxicity induced by cyclosporine A in three renal transplant patients. Am J Kidney Dis 1991;18:116-21.
6. Meenakshi-Sundaram S, Swaminathan K, Karthik SN, Bharathi S. Relapsing Guillain-Barre syndrome in pregnancy and postpartum. Ann Indian Acad Neurol 2014;17:352-4.
7. Haber P, Sejvar J, Mikaeloff Y, DeStefano F. Vaccines and Guillain-Barré syndrome. Drug Saf 2009;32:309-23.

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