Guillain-Barré Syndrome in Pregnancy: A Rare Complication of Varicella

Manish Modi[1]*, Monica Singla[1], Neelam Aggarwal[2], Veenu Singla[3], Arvind Sharma[1]

Departments of [1]Neurology, [2]Obstetrics and Gynecology, and [3]Radiodiagnosis, Postgraduate Institute of Medical Education and Research, Chandigarh, India.

Varicella (chickenpox) infection during pregnancy can lead to serious maternal, intrauterine, or perinatal infections, depending on the time of exposure [1]. Varicella infection during the third trimester is associated with severe maternal morbidity due to increased incidences of pneumonia and multiorgan involvement, including hepatitis, myocarditis, encephalitis, and pancreatitis [1]. However varicella-associated Guillain-Barré syndrome in the third trimester of pregnancy has not previously been reported. Guillain-Barré syndrome in the third trimester is associated with increased maternal risks of respiratory complications and premature delivery [2].

A 32-year-old primigravida presented with a 10-day history of acute onset, progressive weakness of all four limbs during the third trimester. At the time of presentation to the emergency services, she was unable to bear weight on her legs and had upper limb involvement in the form of difficulty raising her arms above the shoulder or combing her hair. She had developed a mild fever and a generalized vesicular rash all over the body, suggestive of varicella zoster virus (VZV) infection (Figure), 2 weeks prior to the onset of limb weakness. Abdominal examination showed a pregnancy of 32 weeks of gestation with normal fetal movements and cardiac activity. Sonographic examination revealed a single viable fetus corresponding to the predicted gestational age, with no congenital malformation. Nervous system examination of the patient confirmed reduced power of grade 3/5 in the upper limbs, and grade 2/5 in the lower limbs. There was generalized hypotonia and areflexia with bilateral flexor plantar response. The cranial nerves were spared and there was no sensory impairment or bladder or bowel involvement. During her hospital stay, the patient's weakness progressed over the next 24 hours and she developed bilateral facial weakness; however, her respiratory effort remained good. Electrophysiological studies revealed evidence of demyelinating polyradiculoneuropathy in the form of prolonged distal latencies of compound muscle action potentials, reduced conduction velocities and absent "F" waves. A diagnosis of Guillain-Barré syndrome was therefore confirmed. Cerebrospinal fluid (CSF) contained 5 cells/μL; proteins, 72 mg/dL (normal, 15–45 mg/dL); and sugar, 64 mg/dL (normal). Serum VZV complement fixation antibody titer was 1:128; however, polymerase chain reaction of VZV in the CSF was not performed. The patient was treated with intravenous immunoglobulin (IVIg) therapy at dose of 2 g/kg (a total of 100 g) in divided doses, administered over 5 days. Her neurologic condition stabilized over the next few weeks, with improvement in muscle power. The patient was kept under observation in the hospital and repeated neurologic examinations were performed, with regular monitoring of respiratory functions. Her pregnancy was supervised, with regular clinical and ultrasound examinations to monitor fetal growth and maturity. She went into labor at 37 weeks of gestation and delivered a healthy male baby weighing 2.7 kg, with a normal Apgar score of 10. Outlet forceps with right mediolateral episiotomy were used to reduce the duration of the second stage of labor, because of

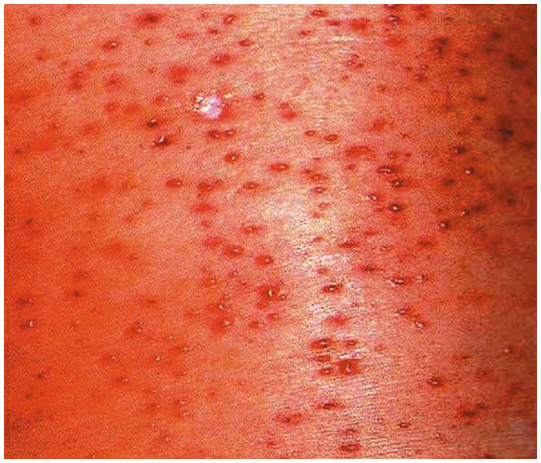

Figure. Varicella skin lesions at different stages. Generalized maculopapular rash, vesicles on erythematous base and crusts.

Correspondence to: Dr Manish Modi, Department of Neurology, Postgraduate Institute of Medical Education and Research, Sector-12, Chandigarh, 160012 India.
E-mail: modim72@yahoo.com
Accepted: September 15, 2009

maternal exhaustion. The serology of the neonate was negative for congenital varicella infection. Following delivery, the patient continued to have steady improvement in power, with grade 4/5 in both upper and lower limbs at 1-month follow-up.

Guillain-Barré syndrome, or acute inflammatory demyelinating polyradiculoneuropathy, is an acute monophasic demyelinating neuropathy with symmetrical muscle weakness, areflexia, and ascending paralysis. Relapse during successive pregnancies has been reported [2]. Although no apparent difference in incidence of Guillain-Barré syndrome between pregnancy and the normal population has been reported, only 50 cases have been reported during pregnancy, including cases in all trimesters of pregnancy, as well as the postpartum period [3]. Guillain-Barré syndrome is generally believed to carry a high maternal risk; as many as 34.5% of women suffering from Guillain-Barré syndrome during pregnancy have been reported to require ventilatory support with maternal mortality exceeding 10% [4].

Patients with Guillain-Barré syndrome commonly have a history of upper respiratory tract infection (40%) or gastroenteritis (20%) within 4 weeks prior to the onset of the disease [5,6]. Among the known infectious agents, *Campylobacter jejuni*, cytomegalovirus, Epstein-Barr virus and *Mycoplasma pneumoniae* have been recently recognized as the most common pathogens associated with Guillain-Barré syndrome in the non-pregnant population. Guillain-Barré syndrome following varicella infection is rare, comprising only 1% of antecedent infections [6]. Autoantibodies and immune complex-mediated damage to the peripheral nerves is proposed as the underlying cause of Guillain-Barré syndrome following infections, and both anti-GM1 IgM and anti-GD-1 IgM antibodies have been reported in Guillain-Barré syndrome associated with VZV [7]. Both plasma exchange and IVIg therapy have been shown to shorten the duration of artificial ventilation and the period of inability to walk, thereby reducing the morbidity and mortality in pregnant women [8]. However, IVIg therapy is preferred because it is associated with fewer side effects. IVIg therapy in the index case led to significant neurologic improvements and subsequent uneventful delivery.

To conclude, despite advances in the treatment of Guillain-Barré syndrome and in standards of intensive care, its early diagnosis and active treatment with IVIg or plasmapheresis, together with the prevention of complications, are the keys to successful management of pregnant women with Guillain-Barré syndrome.

References

1. Daley AJ, Thorpe S, Garland SM. Varicella and the pregnant woman: prevention and management. *Aust N Z J Obstet Gynaecol* 2008;48:26–33.
2. Zeeman GG. A case of acute inflammatory demyelinating polyradiculoneuropathy in early pregnancy. *Am J Perinatol* 2001;18:213–5.
3. Nelson LH, McLean WT. Management of Landry-Guillain-Barre syndrome in pregnancy. *Obstet Gynecol* 1985;65:25S–9S.
4. Yamada H, Noro N, Kato EH, Ebina Y, Cho K, Fujimoto S. Massive intravenous Immunoglobulin treatment in pregnancy complicated by Guillain-Barré Syndrome. *Euro J Obstet Gynecol Reprod Biol* 2001;97:101–4.
5. The Italian Guillian-Barre Study Group. The prognosis and main prognostic indicators of Guillian-Barre syndrome: a multicentre prospective study of 297 patients. *Brain* 1996; 119:2053–61.
6. Jacobs BC, Rothbarth PH, van der Meche FGA, et al. The spectrum of antecedent infections in Guillain-Barré syndrome: a case-control study. *Neurology* 1998;51:1110–5.
7. Yoshikawa T, Suzuki K, Suga S, et al. Immune response to gangliosides in a case of Guillain-Barré syndrome after Varicella. *Arch Dis Child* 2001;83:172–3.
8. Chan LY, Tsui MH, Leung TN. Guillain-Barré syndrome in pregnancy. *Acta Obstet Gynecol Scand* 2004;83:319–25.