Case Report

The autoimmune storm: A mother's battle in the womb

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ABSTRACT

Myasthenia gravis (MG) is an autoimmune disorder affecting the neuromuscular junction, often diagnosed in women of reproductive age. Pregnancy can exacerbate MG symptoms, and management becomes complex in the presence of coexisting infections or autoimmune overlap syndromes. We report a 36-year-old pregnant woman who presented with generalized MG, confirmed by a positive acetylcholine receptor antibody and decremental response on repetitive nerve stimulation. Initial therapy included pyridostigmine, intravenous immunoglobulin (IVIg), and corticosteroids. She was found to be hepatitis B surface antigen (HBsAg) positive with a high hepatitis B virus DNA load, for which entecavir was initiated. At 5 months' gestation, she experienced a relapse with raised inflammatory markers, strong Ro-52 positivity, and perinuclear antineutrophil cytoplasmic antibody seropositivity. She was managed conservatively with IVIg and steroids during pregnancy. Following an uneventful delivery, she experienced a postpartum crisis, managed successfully with IVIg and cyclophosphamide. Azathioprine was added for long-term maintenance. She has remained in remission for over a year. This case highlights the rare combination of MG, chronic hepatitis B, and autoimmune overlap syndrome during pregnancy. With a multidisciplinary, individualized treatment strategy, including antiviral prophylaxis and immunotherapy, excellent maternal and fetal outcomes were achieved.

Key words: Autoimmune overlap, Cyclophosphamide, Hepatitis B, Intravenous immunoglobulin, Myasthenia gravis, Perinuclear antineutrophil cytoplasmic antibody, Pregnancy, Ro-52

Myasthenia gravis (MG) is an autoimmune neuromuscular junction disorder caused by antibodies targeting acetylcholine receptors (AChR) or related proteins, resulting in fluctuating skeletal muscle weakness. It commonly affects women in their reproductive years, and pregnancy can exacerbate symptoms in up to 40% of cases, particularly during the first trimester and postpartum period [1,2]. MG may coexist with other autoimmune conditions such as systemic lupus erythematosus and antineutrophil cytoplasmic antibody (ANCA)-associated vasculitis, though this is rare [3,4]. In addition, coexisting hepatitis B virus (HBV) infection poses challenges in immunosuppressive therapy due to the risk of viral reactivation [5,6].

This case is reported for its unique combination of generalized MG, chronic hepatitis B infection, and autoimmune overlap syndrome in pregnancy, a triad not previously reported in the literature.

CASE REPORT

A 36-year-old woman presented with acute-onset quadriparesis characterized by difficulty lifting objects, rising from a seated position, and head drop. She reported progressive dysphonia, dyspnea, and diplopia, which improved by lifting her eyelids manually. These symptoms started approximately 2 weeks before admission. Symptoms were worse in the evening.

On admission, her vital signs were: heart rate 96 bpm, blood pressure 118/74 mmHg, respiratory rate 20/min, temperature 98.4°F, and oxygen saturation 97% on room air. Neurological examination revealed bilateral partial ptosis and restricted medial gaze bilaterally. Proximal limb power was 3/5 in the upper limbs and 4/5 in the lower limbs. There was extensor neck muscle weakness. Other cranial nerves, cerebellar signs, and sensory findings were normal.

Repetitive nerve stimulation showed a decremental response, and AChR antibody titer was elevated (4.65 nmol/L). Neurological examination of the patient is shown in Table 1. Routine biochemistry was normal except for mild transaminitis (alanine transaminase > aspartate aminotransferase). Serological testing was positive for HBsAg, and the patient had a high HBV DNA load (Table 2). An ultrasound abdomen revealed a single live intrauterine pregnancy of 8 weeks' gestation.

She was diagnosed with generalized MG (Osserman grade IIIA) and started on pyridostigmine, intravenous

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Table 1: Neurological examination findings of the patient

System/component	Findings
Consciousness	Normal
Cranial nerves	Bilateral partial ptosis, restricted gaze
Motor (power)	UL proximal: 3/5; LL proximal: 4/5; distal N
Neck muscle strength	Extensor weakness
Sensory examination	Normal
Cerebellar signs	No dysmetria or ataxia
Reflexes	Normal deep tendon reflexes
Gait	Not assessed (weakness)
Higher mental functions	Normal

Table 2: Laboratory Investigations of the patient

Test	Value	Reference range
AChR antibody (serum)	4.65 nmol/L	<0.50 nmol/L =Positive
Antinuclear antibody profile	Positive	Negative
Ro-52 (Euroline scan)	+++ (Strong+ve)	Negative
PCNA	+ (Positive)	Negative
HBsAg	Positive	Negative
Erythrocyte sedimentation rate	80 mm/h	0–20 mm/h
Alanine transaminase	65 U/L	0–40 U/L
Aspartate aminotransferase	48 U/L	0–40 U/L
Serum sodium	138 mmol/L	135–145 mmol/L
Serum potassium	4.2 mmol/L	3.5–5.1 mmol/L
Serum urea	28 mg/dL	15–40 mg/dL
Serum creatinine	0.9 mg/dL	0.6–1.2 mg/dL

immunoglobulin (IVIg), low-dose corticosteroids, and entecavir for hepatitis B prophylaxis.

At 5 months of gestation, she had a relapse with increased fatigability and bulbar symptoms. Her erythrocyte sedimentation rate was 80 mm/h, and C-reactive protein was elevated, with negative infectious workup. Antinuclear antibody profile revealed strong Ro-52 positivity (+++), and perinuclear ANCA (p-ANCA) was also strongly positive. She was managed with IVIg and continued corticosteroids. The pregnancy progressed uneventfully, and she delivered at term without complications.

In the postpartum period, she experienced another myasthenic crisis. She received IVIg and cyclophosphamide due to a suspected autoimmune vasculitic flare and poor response to steroids alone. Azathioprine was added for long-term maintenance. The patient has remained in clinical remission for 1 year.

DISCUSSION

This case highlights the successful management of a pregnant woman with generalized MG, HBV infection, and autoimmune overlap syndrome (Ro-52 and p-ANCA positivity). The presence of Ro-52 and p-ANCA suggests systemic autoimmune involvement, raising concern for Sjögren's syndrome or ANCA-associated vasculitis.

The initial presentation of generalized MG with respiratory involvement warranted IVIg and pyridostigmine. Corticosteroids were introduced with caution due to pregnancy and HBV. Entecavir was started to reduce the risk of HBV reactivation, which is well-documented with steroid and immunosuppressive therapy [3,4].

A relapse in mid-pregnancy and another in the postpartum period reflected the known pattern of disease fluctuation. The postpartum crisis, with high inflammatory markers and autoimmune positivity, was likely autoimmune-triggered. Cyclophosphamide was chosen over rituximab given its efficacy in systemic autoimmune conditions and its feasibility postpartum. Azathioprine was added for long-term disease control.

While MG with HBV and autoimmunity has been individually reported, their coexistence in pregnancy is exceptionally rare. Bando *et al*. reported a case of MG with autoimmune hepatitis [7], and Fukuda *et al*. described MG overlapping with ANCA vasculitis [8], but neither included pregnancy or triple pathology. Additional reports by Kim *et al*. and Sato. describe MG with hepatitis and vasculitis overlap, but none include pregnancy with all three [9,10].

CONCLUSION

We report a rare and complex case of generalized MG in pregnancy with concurrent HBV infection and autoimmune overlap. A multidisciplinary and individualized approach using IVIg, corticosteroids, entecavir, and cyclophosphamide postpartum resulted in a favorable maternal and fetal outcome. The patient remains in sustained remission on azathioprine. This case underscores the importance of vigilant monitoring and coordinated care in patients with multiple autoimmune and infectious comorbidities during pregnancy.

REFERENCES

1. Gilhus NE. Myasthenia gravis. N Engl J Med 2016;375:2570-81.
2. Djelmis J, Sostarko M, Mayer D, Ivanisevic M. Myasthenia gravis in pregnancy: Report on 69 cases. Eur J Obstet Gynecol Reprod Biol 2002;104:21-5.
3. Yeo W, Lam KC, Zee B, Chan PS, Mo FK, Ho WM, *et al*. Hepatitis B virus reactivation in patients with hepatocellular carcinoma undergoing systemic chemotherapy. Ann Oncol 2000;15:1661-6.
4. Paul S, Saxena A, Terrin N, Viveiros K, Balk EM, Wong JB. Hepatitis B virus reactivation and prophylaxis during solid tumour chemotherapy: A systematic review and meta-analysis. Ann Intern Med 2016;164:30-40.
5. Chiu HC, Yeh JH, Chen WH. Myasthenia gravis and autoimmune rheumatic diseases. Acta Neurol Scand 2000;101:62-4.
6. Sthoeger ZM. Myasthenia gravis in patients with autoimmune diseases: A report of nine cases. Ann N Y Acad Sci 2007;1108:467-73.
7. Bando H, Kim BH, Kim TH, Dong SH, Kim HJ, Chang YW, *et al*. A case of autoimmune hepatitis associated with myasthenia

gravis. Hepatol Res 2001;21:213-8.
8. Fukuda T, Mukai R, Shiraishi M, Saito Y, Kawasaki Y, Iwasa M. ANCA-positive vasculitis overlapping with myasthenia gravis. Intern Med 2018;57:2881-4.
9. Kim JH, Kim BH. Coexistence of myasthenia gravis and autoimmune hepatitis: A case report. Clin Neurol 2013;9:125-8.
10. Sato Y. ANCA-associated vasculitis with myasthenia gravis: A rare overlap. Rheumatol Int 2019;39:533-6.

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