Ach receptor negative MUSK positive Myasthenia Gravis responding to Plasmapheresis.

Dr Poojan Nagariya**,** MBBS, MD General Medicine**.**
Dr Kshitij Kumat, MBBS, MD General medicine.
Dr Dhruveeshsinh Ajaykumar Parmar, MBBS, pursuing MD General Medicine.
Dr Dharmendra Vatsraj, MBBS, MD General medicine.
Dr Sourabh Jain, MBBS, MD General Medicine.

Department of General Medicine, Dhiraj Hospital, Vadodara, India

Author contributions

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ABSTRACT

Myasthenia gravis (MG) is an autoimmune Disease that affects the neuromuscular junction and generally leads to muscle weakness and fatigability. Cases with MG who have no Detectable circulating antibodies (Abs) to acetylcholine receptor (AChR) are defined as having seronegative MG (SNMG). In 2001, a new serum antibody against muscle-specific tyrosine kinase (MuSK) was revealed in SNMG cases and was present in 70% of AChR- Ab- seronegative MG cases. The specific Disease course, especially in response to standard treatment and the prognostic path of MuSK- MG cases, still needs further observation and disquisition. The cases responding to the plasma pheresis exchange in Anti ACHR negative or seronegative group are less. Our case did respond to the Plasmapheresis treatment modality.

KEY WORDS

Sero negative Myasthenia Gravis, Plasmapheresis, Anti MUSK Antibody Positive

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PREFACE

Myasthenia gravis(MG) is an acquired autoimmune complaint, which is intermediated by acetylcholine receptor (AChR) antibody under the action of cellular immunity and complement, performing in the destruction of postsynaptic membrane AChR of neuromuscular junction and the insufficiency of endplate potential, which cannot maintain the normal postsynaptic membrane transmission function. The main clinical features include fatigue which gets worsen at night. Due to the deterioration of the case's condition or improper treatment, the medulla oblongata is involved, resulting in severe dysphagia, which is called myasthenia gravis crisis (MGC). The main clinical instantiations are dyspnea, dysphagia, and general weakness. The routine treatment of MG includes medicine remedy and drug remedy, among which non-drug remedy substantially includes Plasma exchange (PE), immunoglobulin, palpitation, thymectomy, and radiotherapy. PE can directly remove acetylcholine receptor antibodies from the rotation, and the clinical improvement after treatment is roughly related to the drop of antibody situations. In the meantime, it's also effective in acetylcholine receptor antibody-(AChR- Ab-) negative MG cases and can effectively remove muscle-specific kinase antibodies.The clinical benefits of PE generally seen within many days, so PE is frequently espoused in cases with acute exacerbation of MG. Antibodies to muscle acetylcholine receptor are present in roughly 85% of cases with generalized myasthenia gravis and 50% of cases of pure optical symptoms. Up to 70% of Ach R negative myasthenia cases (seronegative myasthenia gravis) have antibodies to muscle specific tyrosine kinase(Musk). This antibody is specific for a form of myasthenia gravis that, although relatively rare, has no other individual serum marker. This reality needs to be considered in the discriminational opinion of cases with unexplained intermittent weakness, especially if the weakness involves bulbar and optical muscles.

CASE REPORT

A 28Yrs old male patient not a known case of any co morbidities presented with complaints of difficulty in swallowing, neck pain, diplopia and generalised weakness. Since two months the vision was apparently alright in months back when he started developing difficulty in swallowing which was for both solid as well as liquid food. Difficulty in swallowing was associated with difficulties in speaking. Patient also complained of neck pain following any activity. There is no history of Neck rigidity or fever. Patient also complains of drooping of eyeballs which was more during evening. Weakness was also present while walking and is associated with breathlessness. Breathlessness is of MMRC grade 3. There is no history of any abnormality of any sensations, fever, weight loss, tremors, rigidity or any involuntary moment or skin rash, joint pain and swelling. The bladder and bowel movements were normal.

The patient had an tb cyst on back area for which the patient had taken treatment for 9 months. Incision and drainage of the cyst was done.

EXAMINATION

Patient is concious, co operative and well oriented to time place and person.

The speech is normal

The tone is normal

Power was 4/5 in all four limbs

Reflexes were +2 for Biceps jerk, triceps jerk, Supinator jerk, Knee jerk, Anklejerk.

Plantor reflexes were bilaterally flexors.

Coordination is normal

Gait is normal

Involuntary movements are absent

Sensory system is Intact

Respiratory System: NAD

GIT System: NAD

CNS System :NAD

CVS System : Conscious and alert

Patient had undergone 5 cycles of Plasmapheresis in ICU setting with replacement fluid being Human albumin in first cycle and fresh frozen Plasmain other 4 cycles.

DISCUSSION

Myasthenia gravis (MG) is a prototypic antibody- intermediated Disease that, in the majority of cases, occurs due to development of autoantibodies against acetylcholine receptors (AChR). The antibodies block AChR- binding spots at the end- plate region; they cross-link and internalize the receptors, and initiate the membrane attack complex via complement activation, thereby destroying AChRs at the end- plate region of the neuromuscular junction. This process is intermediated by a series of immunoregulatory events. The main vulnerable factors involved in the pathogenesis of MG include antibodies against AChR. IVIg works by multiple mechanisms. Main factors involved the pathogenesis of MG that are applicable to the immunomodulatory conduct of IVIg include antibodies, complement, cytokines, FcγRIIb, T cells and antigen-presenting cells (APC), and immunoregulatory genes. IVIG has effects on antibodies, complement, cytokines, FcγRIIB, and T- cell and APC functions. It affects antibodies by furnishing idiotypic antibodies, easing neutralization of pathogenic autoantibodies, by affecting affiliated cytokines, by suppressing B- cell trophic factors, similar as B- cell activating factor (BAFF), and by accelerating the catabolism of pathogenic immunoglobulin G (IgG) by saturating the FcRn transport receptors. IVIg also inhibits complement binding and prevents membranolytic attack complex(MAC) conformation; suppresses pathogenic cytokines; upregulates FcγRIIb inhibitory receptors, intercepting antibody-dependent cell- intermediated cytotoxicity; has effects on antigen presenting cells, T- cell modulatory functions and antigen recognition; and affects immunoregulatory genes. AChR, acetylcholine receptor; APC, antigen- presenting cell; BAFF, B- cell cranking factor; IL,

interleukin; MHC, major histocompatibility complex; TCR, T- cell receptor; Treg, regulatory T cell.

Our patient responded well to the plasmapheresis treatment. The overhead holding of hands improved, and SBC also improved. Patient was able to walk with support and then progressively without support. SBC raised to 42 from initial 20.