Chorea and Parkinsonism with Elevated Striational Antibody

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Abstract

Subacute onset of a mixed movement disorder should alert the clinician to the possibility of an autoimmune or paraneoplastic cause of symptoms. Striational antibodies have been associated with myasthenia gravis but a mixed movement disorder has been rarely reported with this antibody. We report a 90-year-old female who presented with generalized chorea, blepharospasm, and parkinsonism. Extensive evaluation was done which showed an elevation in striational antibody and there was no evidence of malignancy. The patient responded dramatically to intravenous steroids. We suggest that striational antibody should be routinely tested as a part of the work-up for autoimmune or paraneoplastic movement disorder. The presence of chorea in a very elderly patient should not be dismissed as “senile chorea” and a search for treatable etiology should always be performed.

Keywords: Autoimmune, chorea, paraneoplastic, parkinsonism, striational antibody

A 90-year-old Caucasian female with a past medical history of breast cancer was evaluated in the clinic for involuntary movements, which she developed over a period of 4 months that started initially in the neck and progressed to involve her extremities. She also described a decrease in the volume of voice, small handwriting, and difficulty while turning. The movements disappeared during sleep and she could control the movements for a few seconds. There was no history of dysphagia, shortness of breath, double vision, or drooping of eyelids. She also reported a 15-pound weight loss over a period of 4 months. The diagnosis of breast cancer (Stage I) was made 20 years ago which was treated with mastectomy only without any chemotherapy or radiation. The patient’s general examination was significant for cachexia. On neurological examination, she was alert and oriented. Cranial nerves were intact except for blepharospasm on both sides. There was no impairment in saccedes or smooth pursuit. Her strength, sensory, and coordination testing were normal. She had irregular, involuntary, continuous, and partially suppressible movements in extremities and neck (more on the left than on the right). There was bradykinesia, hypophonia, micrographia, and difficulty in turning while walking [Video 1].

Magnetic resonance imaging (MRI) of the brain showed bilateral T2-FLAIR (T2-weighted-Fluid-Attenuated Inversion Recovery) hyperintensity in the basal ganglia without contrast enhancement [Figure 1]. Electromyography and nerve conduction study did not show any evidence of neuromuscular junction disorder. Computed tomography (CT) scan of the chest did not show thymoma. Also, $^{18}$F-labeled fluoro-2-deoxyglucose positron emission tomography/CT ($^{18}$F-FDG-PET/CT) did not show any area of hyper metabolism concerning malignancy. The following investigations: Glutamic acid decarboxylase (GAD65), thyroglobulin, thyroperoxidase antibody, vitamin E, serum protein electrophoresis, JAK2 mutation, antinuclear antibodies (ANA), dsDNA, rheumatoid factor, beta-2 glycoprotein, and creatine kinase were either negative or normal. A paraneoplastic antibody panel in the serum performed by Mayo Clinic Laboratories® showed an elevation in striational antibody titers (1:15360) [alternative names: anti-skeletal muscle antibody, skeletal muscle antibody, and anti-striated muscle antibody]. This antibody is tested with an enzyme immunoassay (EIA) technique. There was no elevation in acetylcholine receptor blocking, binding, or modulating antibody. Cerebrospinal fluid (CSF) was negative for malignant cells. The diagnosis of nonparaneoplastic autoimmune chorea was made, and the patient was administered 1g intravenous methylprednisolone for 4 consecutive days which led to the resolution of her abnormal movements [Video 2]. There was a marginal improvement in her voice. Further immunosuppression with a low dose of oral prednisone is planned. The subacute onset of multiple movement disorders in the same patient (Parkinsonism, blepharospasm, and chorea) suggests an autoimmune etiology. In our patient, an elevation of Striational antibodies (StrAb) was seen in the absence of malignancy. Her movements resolved following intravenous steroid treatment.

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steroids which confirms autoimmune etiology. The unique point in our patient is the inflammatory changes in the basal ganglia on brain MRI. It is not known whether StrAb is pathogenic but these abnormalities on brain MRI have been described in post-streptococcal central nervous system (CNS) syndromes.[2] Brain imaging may be normal in autoimmune or paraneoplastic CNS disorders and is of limited value in the diagnosis. We found two more cases of non paraneoplastic autoimmune chorea due to elevated StrAb.[3,4] There was no evidence of a concomitant autoimmune disorder in one case while the other case had rheumatoid arthritis.[4] Occasionally, this antibody can be elevated before (from months to years) the detection of malignancy but no clear guidelines exist for the surveillance of malignancy.[5]

StrAb target the contractile proteins (titin, myosin, actin, ryanodine, etc.) in a skeletal muscle.[5] StrAb in combination with acetylcholine receptor antibodies (AchRAb) is a marker of myasthenia gravis (MG) and thymoma. The elevation of StrAb alone is usually not seen in MG and may serve as a marker for an autoimmune process such as rheumatoid arthritis and pernicious anemia.[9] Other rare causes of StrAb elevation includes soft tissue sarcoma and adenocarcinoma of lung, prostate, ovary, kidney, and colon.[3] Usually, higher titers of StrAb and the presence of coexistent antibodies point to a paraneoplastic etiology.[5]

In MG, patients with StrAb have an association with Human leukocyte antigen B27 (HLA–B27) while patients who tested negative for the antibody did not associate with that haplotype[6] and this suggests the involvement of the histocompatibility complex in the immune response. The humoral immune response is thought to take place in the thymus in patients with MG.[7] The antibodies pathogenicity in MG is not clear. However, they have demonstrated the Immunoglobulin G1 (IgG1) pathway complement fixation in vitro, which could be one proposed mechanism of a more generalized immune response.[8] We propose that a similar mechanism is involved in targeting other antigens in the CNS and there could be either an element of molecular mimicry or epitope spreading, which would be interesting to explore further in future.

There are no guidelines for the immunosuppressive treatment of chorea due to elevated StrAb and the treatment is based on the experience from case reports and anecdotal evidence. Initial therapy is instituted with intravenous steroids or intravenous immunoglobulin followed by the use of a low dose of oral prednisone.[1] A steroid-sparing agent (such as azathioprine) is usually added and prednisone is tapered over a period of 6–8 months.[10] The authors propose that StrAb should be tested in patients with chorea as a part of the autoimmune evaluation.

**Author contributions**
H. Gupta and Y. Jassam wrote the first draft of the manuscript. All authors contributed to manuscript writing/revision.

**Ethical standard**
We confirm that we have read the Journal’s position on issues involved in ethical publication and affirm that this report is consistent with those guidelines. All authors have approved the final article.

**Ethics statement**
A written informed consent for the video was provided by the patient. The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his 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.

**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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