Management of Status Dystonicus Beyond Intensive Care: An Etiology-Specific Approach

Status dystonicus (SD) or dystonic storm is a rare medical emergency to which individuals with any basal ganglia pathology are susceptible.[1] The paper by Joshi *et al*. highlights the shift in the trends of the etiology in SD. Prior studies have shown that cerebral palsy was the most common underlying etiology.[2] At the same time, Joshi, *et al*.,[2] and colleagues, in their paper, found unprecedentedly that metabolic diseases such as Wilson's disease (WD) and aromatic amino acid decarboxylase deficiency comprise the most common group of patients who presented with SD. The second most common etiology was heredodegenerative diseases such as neurodegeneration with brain iron accumulation (NBIA). Unlike dystonia secondary to hypoxic brain damage that responds variably to symptomatic therapies, effective treatment is available for WD that not only halts the progression of the disease but also gradually reverses the movement disorders in a significant proportion of patients with WD.[3] Given that SD is an important clinical milestone in the course of dystonia that could eventually be life-threatening, preventing progression to this stage is paramount.[2] With the shift in the predominant group presenting with SD, revisiting the finer aspects of the management of SD could be pertinent.

Acute worsening of dystonia could be the harbinger of impending SD.[4] This acute worsening necessitating hospitalization is termed pre-SD[5] and indicates stage 3 of the dystonia severity action plan (DSAP). Pre-SD could be underdiagnosed in clinics.[5] Prompt identification and aggressive management could prevent progression to SD. One primary treatment method of SD is resting the dystonic muscles and the dystonic brain.[6] A similar treatment strategy may also benefit pre-SD. Besides the standard anti-dystonia medication, putting these patients to sleep with lighter sedation could effectively alleviate dystonic spells by resting the dystonic muscles. Clonidine, given intravenously or orally and enterally administered chloral hydrate,[4,7] has relatively low sedative properties and could be beneficial. Patients with severe dystonia at baseline and those with brittle dystonia are more likely to have recurrent episodes of SD, underscoring the need for a long-term care plan for these patients.[4]

The management of acute worsening of dystonia in WD deserves special mention. While infection, pain, stress, and acid reflux are the common precipitating factors in cerebral palsy and neurodegenerative diseases,[8] in WD, one of the precipitating factors of SD is an introduction and escalation of drugs causing copper chelation. Penicillamine, in particular, has had a notorious reputation in this regard.[9] Although penicillamine can worsen dystonia and lead to SD by causing excessive copper mobilization from the liver to the brain as a consequence of chelation, the development of SD following zinc supplementation led to the possibility that these patients could have been on the progressive trajectory of the natural course of WD.[8] A combination of both these factors could have also precipitated SD. Fervent use and escalation of penicillamine in rapidly progressive WD can cause severe symptoms.[3,10] In such circumstances, the options are to tide over with zinc monotherapy and then restart penicillamine very slowly or shift over to trientine. Trientine has comparable efficacy with penicillamine in all WD patients.[11] Continuing zinc monotherapy has favorable outcomes following penicillamine-induced acute worsening.[3,10] SD is reported with penicillamine even at a slow titration of as slow as 125 mg every week.[3] As penicillamine takes months to show clinical benefit,[10] increasing the dose even more slowly would be prudent. Severe hepatic WD also responds favorably to plasma exchange,[12] and thus, plasmapheresis could be considered in the acute worsening of dystonia in WD. Delay in initiating treatment for WD beyond 24 months of symptoms can be associated with irreversible damage of basal ganglia and gliosis.[13] Further studies might clarify the possibility of a link between irreversible damage in the basal ganglia in WD and predisposition to SD.

The treatment of SD is dictated by the severity of the condition and the patient's characteristics.[2] However, the therapy may also need to be tailored to the etiology.[7] The therapy of resting the dystonic muscle and dystonic brain might alone prove unsuccessful in curtailing the symptoms of SD in neurodegenerative disease.[14] While the principles of sedation, hydration, and use of anti-dystonic medication may remain identical in all SD patients and the majority of the patients improve with intensive care,[5] SD due to heredodegenerative diseases such as NBIA and ataxia telangiectasia wherein the dystonia and other clinical features are expected to progress over time is more likely to benefit from intrathecal baclofen and surgical interventions such as deep brain stimulation (DBS) of globus pallidus. Unilateral or bilateral staged pallidotomy can be considered when DBS is not feasible.[5,8,15]

Joshi *et al*.[2] reported deterioration in the quality of life after recovery from SD compared with that before SD. While most studies have resorted to neurosurgical intervention as a treatment for refractory SD,[8,15] some authors have advocated an early treatment in SD.[16,17] Further studies could give us more insight into whether early neurosurgical intervention during SD in genetic disorders could lead to a better quality of life than delayed surgery.

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