A 5 Years Old Male Child with Inflammatory Demyelinating Diseases: a rare case report

Aditya Nistane1, Kavita Gomase2, Roshan Umate3
1Third-year BSc Nursing student, Smt. Radhikabai Meghe Memorial College of Nursing Sawangi (Meghe) Wardha, Datta Meghe Institute of Medical Sciences (Deemed to Be University) Maharashtra, India.
2Assistant Professor, Department of Obstetrics & Gynaecology Nursing, Smt. Radhikabai Meghe Memorial College of Nursing, Datta Meghe Institute of Medical Sciences (Deemed to be University) Sawangi (Meghe) Wardha, Maharashtra, India.
3Research Scientist, Jawaharlal Nehru Medical College, Datta Meghe Institute of Medical Sciences, Sawangi, Wardha, Maharashtra.
DOI: 10.47750/pnr.2022.13.S07.151

Abstract

Background: A neurological condition known as demyelinating illness causes damage to the myelin sheath, which protects nerve fibers, optic nerves, and the spinal cord. The damage weakens the conduction of transmission signals in affected nerves. This reduction causes deficiency in cognition, movement, sensation, or other neurological functions in which the nerves are involved. Here we are presenting a case of a 5-year-old male child who was brought by his parents to the emergency department with the chief complaints of difficulty in swallowing, slurred speech, weakness, stiffness of muscles, fever and cough, pain, and loss of coordination. He has a history of hospitalization for pneumonia at the age of one year. Physical examination shows weakness and dullness along with localized tenderness, muscle spasms, difficulty in movements, and slurring of speech. He has undergone a blood test, Magnetic resonance imaging (MRI). And then started on immunosuppressive therapy.

Keywords: Demyelination, myelinoclastic, leukodystrophic.

INTRODUCTION

Demyelination disease is connected to the loss of myelin and it is a kind of adipose tissue that protect as well as covers the nerves all around the human body. This state causes cerebral shortfall, like behavioral or cognitive problems, vision changes, altered sensation, and weakness. Demyelination damages the part of the brain, peripheral nerves, and spinal cord. It can arise as a result of a variety of medical diseases and situations. Multiple sclerosis is the most prevalent demyelinating disease (MS). (1) Demyelination damages spinal and nerves, causing cognitive impairments and leg weakness, as well as a loss of bowel and bladder control. The damage weakens the conduction of transmission signals in affected nerves. (2) When they affect the white matter, lesions are frequently big, multifocal, hyperintense, and asymmetric. Involvement of the thalamus and basal ganglia in the grey matter is frequently observed in this way. When making the diagnosis of acute disseminated encephalomyelitis, sequential MRI is crucial because it can reveal partial or complete remission of the lesions. (3)

CASE PRESENTATION

A 5-year-old male is presented with the chief complaints of difficulty in swallowing, slurring of speech for 5 days, weakness and stiffness of muscles, fever and cough for 5 days, pain, and loss of coordination for 15 days. The patient also developed changes in bladder and bowel function for 7 days. He is having a history of prior hospitalization of pneumonia when he was one year of age for that he was treated in the local hospital.

On physical examination weakness and dullness were found in the lower extremities along with localized tenderness, muscle spasms, difficulty in movements, and slurring of speech. The patient’s gait was unstable. The neurological findings in the patient were attributed to the spinal cord lesion, and the cranial lesions at that time were thought to be asymptomatic.
A patient has undergone an investigation like MRI, Complete blood count, Erythrocyte sedimentation rate (ESR), and -reactive protein test, Liver Function Test, and Kidney Function Test. Complete blood count shows Hb% - 9.3 gm%. Peripheral smear shows RBCs – normocytic mildly hypochromic platelets, adequate on smear. No hemiparasite was seen. ESR (Erythrocyte sedimentation rate) is 18mm. MRI shows hypointense, edematous, non-enhancing lesions in bilateral occipital regions.

The patient is on symptomatic treatment, rehabilitation, immunosuppression, and supplements. The patient is treated with Inj. Methylprednisolone, Tab. Omnacortil, syrup. Melvil. The patient is on supplements such as B12 and copper, which help the restoration of normal nutrient levels. A modest dose of injectable (IV) steroids or plasma exchange is used to treat the disease.

**DISCUSSION**

Children are typically diagnosed with acute disseminated encephalomyelitis (ADEM), a clinically isolated syndrome (CIS), such as transverse myelitis, or Neuromyelitis Optica at the time of their initial presentation. These conditions could lead to physical and mental impairment or be identified as Multiple Sclerosis at the end (MS). (4)

Recent research has increased knowledge of inflammatory demyelinating illnesses, which were previously thought to be more common in adults than in children. Some juvenile inflammatory demyelinating illnesses have a poor prognosis over the long term, but the course of treatment can be improved. The potential for physical and mental impairment brought on by these illnesses emphasizes the urgent requirement for therapeutic approaches for neurorehabilitation, neurodegeneration, and neuro repair. (5-15)

A study was done on, the two most common demyelinating syndromes in children is examined. MS i.e. multiple sclerosis and ADEM i.e. acute disseminated encephalomyelitis are two diseases that affect the central nervous system. The smaller the children, the more research is necessary to identify its physiological and pathological aspects, likely causative agents, symptoms, diagnostic, treatment, prognosis, history, and unique changes that complicate diagnosis. (16-24)

According to the research, there is a connection between MS lesions and the neuroimaging and etiology of several inflammatory disorders of the central nervous system, such as neuromyelitis optica, acute disseminated encephalomyelitis, and Balo's concentric sclerosis. It covers the pathological characteristics of many inflammatory demyelinating conditions that affect the central nervous system as well as neuropathological research that has illuminated potential mechanisms underlying the emergence of demyelinated lesions. (25-26)

**CONCLUSION**

Demyelination disease is the loss of myelin and this results in neurological shortfalls, like behavior and cognitive problems, vision changes, weakness, and altered sensation. This type of condition can occur in any age group, but each demyelination disease affects different areas of the brain, spinal cord, and peripheral nerves. Significant therapeutic and prognosis ramifications follow from a demyelination diagnosis. The majority of the time, the diagnosis is made clinically, with the histopathologist's role being primarily limited to postmortem confirmation and clinicopathological association. The histological evaluation, however, occasionally plays a crucial role in determining whether demyelination is present or what caused it to occur before death.

**REFERENCES**
