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Cerebroprotein Hyodrolysate in Extra-Pontine Myelinosis – A Case Report

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Abstract- Extrapontine myelinosis (EPM) is a common co-occurrence with central pontine myelinosis in head injury and alcohol withdrawal where hyponatremia may be the precipitating cause. There are not many treatment options available in these cases except a supportive management. We describe here a case of head injury under the influence of alcohol that also displayed EPM without hyponatremia after alcohol withdrawal in a chronic alcoholic that responded very well to cerebroprotein therapy.

Index Terms- Extra pontine myelinosis, cerebroprotein, head injury, hyponatremia.

I. Introduction

Central pontine myelinolysis (CPM) is a disease affecting alcoholics and the malnourished with hyponatremia being a common cause.[1]. In approximately 10% patients, CPM is associated with extrapontine myelinolysis (EPM), and this may generate parkinsons symptoms and psychotic features.[2] Although the cause and pathogenesis of CPM and EPM remain unclear, many studies have implicated the rapid correction of hyponatremia as the major factor associated with CPM, due to exposing the pontine glia and extrapontine glia to osmotic stress.[3]

Cerebroprotein hydrolysate is an unique neurotrophic peptidergic mixture produced by standardized enzymatic breakdown of lipid-free porcine brain proteins.[4] It has unique neurotrophic activity that enhances neurogenesis, neuronal survival, provides neuromodulatory action, increases neuronal plasticity and neuronal repair and has neuroimmunotrophic actions.[5] It has been found in animal studies that early intervention with cerebrolysin reduces blood-brain and blood-cerebrospinal fluid barriers permeability changes, attenuates brain pathology and brain edema, and mitigates functional deficits caused by traumatic brain injury.[6] It improved brain bioelectrical activity i.e. reduced EEG ratio by increasing fast frequencies and reducing slow activities and also enhanced cognitive performance in tasks evaluating attention and memory functions in postacute traumatic brain injury patients.[7] We describe here a case of head injury under the influence of alcohol that also displayed EPM without hyponatremia after alcohol withdrawal in a chronic alcoholic that responded very well to cerebroprotein therapy.

II. Case Report

A 35 year old 8th standard educated, married male furniture repairer work was referred to us from the internal medicine department in view of further management of alcohol dependence. He was alright till 3 weeks prior to presentation when under the influence of alcohol he met with an accident and suffered a head injury, details of which were not known to relatives and the patient had no memory of the same. He was admitted in the surgery ward for 7 days and was in semi-conscious state for 2-3 days. CT Scan of the brain showed 'Linear mildly displaced fracture of left frontal bone involving both tables of frontal sinus, comminuted displaced fracture of lamina, papyracea, ethmoid trabculae, inferior lateral wall of left orbit and greater wing of left sphenoid bone. The fracture fragments impinging on left medial and lateral rectus and involving inferior orbital fissure. There was another linear and undisplaced fracture of right petrous temporal bone involving walls of the sphenoid sinus and right foramen ovale with hemo-mastoid. Extadural hemorrhage were seen in left frontal and left temporal region'.

On recovery the patient was discharged and went home and at home started with altered behavior in form of irrelevant talking that someone was coming to harm him, could see things invisible to others, was hearing voices inaudible to others, was not able to identify relatives, had decreased sleep at night and would try to run away from home. So was brought to our hospital immediately and admitted in medicine ward for his delirium state 2-3 days after admission he got better and stopped irrelevant talking and running away behavior. But he stopped talking, also started developing rigidity of limbs and tremors of body. He was incontinent too. He was not able to walk or get up from lying down position. He became bed ridden. He could not do any of his personal chores and had to be assisted in everything. An MRI Brain showed 'Bilateral caudate nucleus, lentiform nucleus, insular cortex, splenium of corpus callosum which were T2 and FLAIR hyperintense that meant subtle restriction of diffusion most likely secondary to hypoxic ischemic changes and extrapontine myelinosis. The patient was diagnosed as hypoxic ischemic encephalopathy and extrapontine myelinosis in a case of head injury with subdural hematoma and subarachnoid hemorrhage. Extradural collection in left frontal and left temporal region showing restriction of diffusion with corresponding low ADC values and thin peripheral rim which blooms on gradient sequences suggestive of extradural hematoma (subacute). Thin rim of concavo-convex extra-axial, subdural collection noted in right fronto-parietal region of maximum thickness of 4.8mm which is T2 hyperintense and FLAIR and T1 hypointense and does not show restriction of diffusion suggestive of subdural haemotama. Sub arachnoid haemorrage in right high parietal region. T2, FLAIR and T1 hyperintense signal is noted in left anterior ethmoid air cells, right sphenoid sinus and right mastoid air cells suggestive of hemosinus and hemomastoideum'.

His condition did not improve so was referred to psychiatric department to us after about 2 weeks. We evaluated him and diagnosed him as major neurocognitive deficit disorder due to traumatic brain injury in a case of delirium. We decided to start him on cerebroprotein therapy. His Addenbrooke's Cognitive Examination- (ACE-R) score was 0/100 as he was not able to speak. Also his score on Barthel's activities of daily living (ADL) was 2. He received 20 injections of cerebroprotein 60mg i.v. in 100cc normal saline over 1-2 hour infusion. His condition started gradually improving. He started feeding by self after the 9th injection. He stared walking with support. His rigidity and tremors gradually started disappearing. After the 20th injection his ACE-R was 60/100 and Barthel's ADL score was 12. On discharge he was able to feed by self, dress by self, go to the toilet by self.

III. Discussion

Traumatic brain injury causes functional disability in the patient and there are very few medications that may reduce it. The complex study of cognitive and emotional status, levels of serum serotonin and brain-derived neurotrophic factor (BDNF) performed in 72 patients with acute traumatic brain injury, with a special focus on middle brain injuries (MBI), treated with Cerebrolysin found that cerebrolysin promotes activation of neurotrophic processes and improves outcomes of closed craniocerebral injury.[8] A double-blind, placebo-controlled, randomized study showed that Cerebrolysin improves the cognitive function of patients with mild traumatic brain injury (MTBI) at 3rd month after injury, especially for long-term memory and drawing function tested on Mini-Mental Status Examination (MMSE) and Cognitive Abilities Screening Instrument (CASI) scores.[9] Cerebroprotein hydrolysate is a medication that acts at a brain level and provides us with an effective tool for improving levels of activities of daily living in patients of head injury and decreasing their dependence on caregivers though further trials in large populations and clinical trials is warranted. To the best of our knowledge this is the first case report of cerebroprotein therapy with a successful outcome in a case of head injury with extra pontine myelinosis.

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