Oromandibular Dystonia and Persistent Psychiatric Symptoms in Extra-pontine Myelinolysis


Abstract
A 32 years female presented with gradually progressive dysarthria, dysphagia, oromandibular dystonia and mild generalized weakness. She had several episodes of acute psychotic behavior. She had abnormal saccadic eye movements, generalized hypertonia and exaggerated jerks in upper limbs. She was previously treated in a peripheral hospital for severe vomiting and diarrhea. MRI of brain revealed symmetrical T-2 weighted hyperintensities in bilateral putaminal and caudate region along with pons and midbrain suggesting demyelination due to a metabolic insult. Her power improved gradually over days and the dysarthria, dysphagia and oromandibular dystonia improved gradually over several weeks with supportive measures but the psychiatric manifestations are still persisting. ©

INTRODUCTION
Central pontine myelinolysis (CPM) is a rare demyelination syndrome involving the centre of the basis pontis. Very rarely similar lesions are seen involving extra-pontine structures called extra-pontine myelinolysis (EPM). These two constitute ‘osmotic demyelination syndrome’ (ODS) characterized pathologically by non-inflammatory demyelination of various brain structures with sparing of axons. Rapid correction of severe hyponatremia is the most commonly implicated cause of ODS which may have varying clinical manifestations. We report a case of extra-pontine myelinolysis in a 32 years old lady who suffered severe hyponatremia following severe vomiting and diarrhea and was managed in a peripheral hospital.

CASE REPORT
A 32 years old Hindu housewife was referred to our OPD for loss of speech, difficulty in swallowing along with generalized weakness. Slurring of speech and dysphagia progressed gradually over past seven days ultimately leading to a persistently opened mouth along with inability to protrude the tongue. Twenty days ago she was treated in a peripheral hospital for severe vomiting and diarrhea, hyponatremia and pre-renal acute renal failure. She received iv fluids, inj ondansetron, inj ciprofloxacin and inj metronidazole. She became unconscious during admission to that hospital. She was discharged home in a stable condition but started having problems after a few days. She developed two episodes of acute psychotic behavior along with loss of emotional control prior to referral and developed similar episodes several times after admission interspersed with normal sensorium and behavior. She had no fever, visual disturbance, or any significant past illness. Prior to the index illness she had no feature suggestive of a psychiatric illness.

On examination, she was drowsy, unable to close her mouth, move her tongue or swallow along with ineffective cough reflex. The saccadic eye movements were slow. She had generalized hypertonia (upper limbs > lower limbs) with resistance to passive neck movements. Her power was grade 4/5 in all her limbs. There was oromandibular dystonia. The deep tendon reflexes were exaggerated in upper limbs only. Plantar reflex was flexor bilaterally. Sensory, cerebellar and autonomic functions were normal.

Available blood biochemistry reports from the peripheral hospital revealed: Na⁺ - 112 meq/L, K⁺ - 3.2 meq/L, Urea - 82 mg/dL, Creatinine - 1.4 meq/dL

Investigations after admission revealed: Hb -10.2 gm/dL, WBC – 8,000 /cmm, N₅₀ L₄₀ M₁ E₀ B₀, Platelet -1.8 lac/cmm, ESR- 25 mm in 1st hour, Na⁺ - 137 meq/L, K⁺ - 4.4 meq/L, Urea – 14 meq/L, Creatinine – 1.0 meq/L, Bilirubin- 0.5 mg/dL, AST-43 u/L, ALT-51 u/L

A CSF study showed: Total 3 cells/cmm, all lymphocytes, Glucose- 90 mg/dL, Protein- 34 mg/dL

Serum ceruloplasmin – 40 mg/dL.

MRI of brain done about 10 days after onset of symptoms showed: symmetrical T-2 weighted
hyperintensities in bilateral putaminal and caudate region with similar lesions seen also in pons and midbrain. There were mild atrophic changes in cerebral and cerebellar cortex.

Her sensorium and power improved gradually over days and the dysarthria, dysphagia and oromandibular dystonia improved gradually over several weeks. The apparent psychiatric episodes characterized by excessive laughter, agitation and cry are recurring even after 15 weeks.

**DISCUSSION**

Extra-pontine myelinolysis is a rare form of osmotic demyelination syndrome involving extrapontine structures with or without involvement of the
pons. A variety of sites may be involved e.g., pons, cerebellum, lateral geniculate body, external capsule, hippocampus, putamen, cerebral cortex, thalamus, caudate nucleus, claustrum, internal capsule, midbrain, etc. Microscopically, the lesions show degeneration and loss of oligodendrocytes with preservation of axons and nerve cells without any evidence of inflammation. The patients usually go through a biphasic clinical course: initial encephalopathic illness due to hyponatremia then recovering rapidly with correction of hyponatremia only to deteriorate several days later with dysarthria and dysphagia (secondary to cortico-bulbar fibre involvement) along with flaccid quadriparesis (from cortico-spinal tract involvement) which later becomes spastic. There may be pupillary abnormality and conjugate gaze paresis if the lesion extends to tegmentum. There may be a ‘locked in’ state of pseudocoma. EPM may present with a complex clinical picture in addition to those mentioned. There may be apparent psychiatric and behavioral changes and a variety of movement disorders like mutism, parkinsonism, dystonia or catatonia.

Dopamine antagonist antiemetic agents (though not used in our patient) can cause acute dystonia (metoclopramide commonly and domperidone rarely) usually occurring after iv administration. The dystonia in our patient developed several days after she was discharged in an asymptomatic condition, which is commensurate with the pathophysiology of osmotic demyelination syndrome.

CPM/EPM has been reported in a variety of conditions associated with severe biochemical and electrolyte abnormalities. Well recognized among them are alcoholism, malnutrition, after prolonged diuretic use, burns, post-liver transplant etc. Hyponatremia especially when corrected rapidly is the most commonly implicated cause. Hypernatremia is also a known cause especially in patients with severe burn injury.

The MRI appearance of CPM/EPM is very characteristic with hyperintensities on T-2 weighted images which are strikingly symmetric and non-contrast-enhancing.

There are no specific therapy shown to be effective and supportive measures are the mainstays of therapy. This makes prevention in the form of gradual correction of hyponatremia is the most important measure to avoid this complication. The rate of correction of hyponatremia should be governed by neurological status of the patient. In asymptomatic patients, plasma Na should be raised very slowly (0.5-1.0 mmol/L per h and upto 10-12 mmol/L over first 24 h). In patients with altered mental status (like this patient during initial presentation) and/or seizures, a relatively rapid correction (1-2 mmol/L per h for first 3-4 hours or until seizures stop and upto 10-12 mmol/L over first 24 h) is required. Severe symptomatic hyponatremia should be treated with hypertonic saline. In other conditions isotonic saline may be used.

Prognosis may not be as grave as it was previously thought of. The outcome may be death, disability or recovery to a virtually normal functional level but neither clinical severity nor extent of radiological/imaging changes are predictive of the prognosis.

The interesting points in our patient were that in spite of extensive radiologic involvement of the pons, she had minimal weakness and pyramidal signs, and rather prominent extra-pyramidal features; and several episodes of apparent psychiatric behavior that are persisting even after 15 weeks of the onset of the illness.

REFERENCES

Announcement
7th National Autoantibody Workshop will be held at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow from September 1-6, 2008.

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