Cerebellar ataxia as an early neurological symptom in a patient with Enteric fever – A case report from north India

Virender Kumar Gehlawat*, Rizwan S A, Vijay Silan****

* Department of Paediatrics, Pt. BhagwatDayal Sharma, PGIMS, Rohtak, Haryana.
** Centre for Community Medicine, All India Institute of Medical Sciences, India

***Abstract*-** Neuropsychiatric complications in Enteric fever are not uncommon, however cerebellar ataxia as an isolated manifestation is very rare. A 12 year old boy presenting with fever and cerebellar symptoms was diagnosed with Enteric fever. After starting a course of intravenous antibiotics and steroids, he became afebrile and neurological symptoms abated with no residual effects after four weeks.

Index Terms- Cerebellar ataxia, Neurological manifestations, Typhoid fever

I. INTRODUCTION

Enteric or Typhoid fever is a common systemic illness with a wide spectrum of presentations and complications. Neuropsychiatric complications in Enteric fever are not uncommon, having an incidence of 5 to 35% in adults and 2.1 to 2.7% in children. [1,2] However, cerebellar ataxia as an isolated early neurological manifestation is very rare. Central Nervous System complications usually present in the second week of illness. [3] We report the case of a 12 year old boy presenting with ataxia and dysarthria on day three of a febrile illness to a tertiary care hospital in Haryana, north India.

II. THE CASE

A 12 year old boy presented with a history of fever for three days, who during the third day developed difficulty in walking and speaking. The boy had no history of headache, vomiting, seizures, loss of consciousness, decreased vision or ear discharge. On examination he was febrile (39.4 0C) with a pulse rate of 98 per minute. There was no pallor, icterus or lymphadenopathy on general examination and anthropometric parameters were within normal range. The boy was conscious, oriented, with normal higher mental functions and intact cranial nerve functions. Motor examination revealed normal tone and power in all four limbs and the plantar reflexes were flexor. However the boy had positive cerebellar signs in terms of broad based gait, slurring of speech, dysdiadochokinesia, abnormal finger nose test and pendular knee jerk reflex but there was no nystagmus, hypotonia or rebound phenomenon. There were no signs of meningeal irritation. Rest of the systemic examination, including fundoscopy, were normal.

Investigations on the day of admission revealed normal hemoglobin level (12.2 g/dL), normal Total Leucocyte Count (TLC, 6.6 × 109/L), normal Differential Leucocyte Count (Polymorphs 55%, Lymphocytes 40% Monocytes 3% and Eosinophils 2%) and a lowered platelet count (50.0 × 109/L). Peripheral smear examination for malarial parasites and rapid malarial antigen tests were negative. However, blood culture revealed growth of Salmonella typhi on day three of admission. The isolate was sensitive to Chlromphenicol, Cefixime, Cefoperazone, Azithromycin, Amikacin, Ofloxacin, Levofloxacin and Gatifloxacin. Widal test was positive (TO titer of 1:160) with rising titers in subsequent tests, consistent with Enteric fever. Liver and renal function tests, serum electrolytes, cerebrospinal fluid (CSF) analysis and CT scan of head were normal.

On the third day of admission the boy was started on intravenous Ofloxacin (7.5 mg per Kg per dose 12 hourly) and a course of Dexamethasone (0.5 mg per Kg per dose 6 hourly). The steroid therapy was given for 48 hours only. After four days of treatment, he became afebrile. Thrombocytopenia improved after five days of starting treatment and by the tenth day gait returned to near normal and he was able to walk without support, and speech became normal by 12th day. The child was discharged after completion of 14 days of treatment with intravenous Ofloxacin. A follow-up examination four weeks after discharge revealed no abnormal neurological symptoms or signs.

III DISCUSSION

This case report highlights three important findings - cerebellar ataxia can occur as an early neurological manifestation of Enteric fever, thrombocytopenia can also occur as an early manifestation of Enteric fever and there can be a dramatic improvement in

neurological symptoms following steroid therapy. Central Nervous System involvement in Enteric fever has a wide spectrum of presentation. Delirium, meningism, coma and convulsions have been described as common neurological complications of Enteric fever but acute cerebellar ataxia as an isolated and early manifestation of Enteric fever is reportedly very rare. [4,5] The prevalence of cerebellar ataxia in Enteric fever has been reported to range from 2.5 to 3.5%. [6,7] Cerebellar ataxia in Enteric fever commonly occurs in the second week of illness (60%) as compared to the first week (25%). [4] The pathophysiology of these neurological manifestations is still not clear but metabolic disturbances, hyperpyrexia, dehydration, electrolyte imbalance, toxemia and non-specific cerebral changes (edema and hemorrhage) have been described as possible mechanisms. [8] In our patient cerebellar ataxia developed in the first few days of illness which was a rare presentation. Ataxia is usually self-limiting and resolves completely within 4 to 6 weeks of onset, and the mean duration is reported to be about 10 to 14 days. [4,9] In our case, ataxia resolved within 10 days of illness and the resolution was probably due to the short course of steroids. The reported incidence of thrombocytopenia in Enteric fever among Malaysian children was 26%. [10] Toxic suppression of bone marrow is believed to be a cause of thrombocytopenia in Enteric fever. Complete recovery is expected following successful treatment of the underlying infection. Our case also presented with thrombocytopenia which responded well to treatment. CT and MRI studies in most of these cases is usually reported to be normal, as was the case in our patient, indicating that there were no gross structural damages and suggesting the reversible nature of these neurological events.

Mainstay of treatment of such complications in Enteric fever includes appropriate antibiotics based on the sensitivity profile of the isolates and steroids. Kang JK et al have reported the success of high doses of intravenous Dexamethasone together with antibiotics in the treatment of a patient presenting with cerebellar ataxia. [11] Our case also responded well to intravenous Dexamethasone and antibiotics. The recovery was complete.

IV Conclusion

It would be worth remembering that one should look for unusual manifestations of Enteric fever which may be the presenting features. Therefore, when investigating a case of cerebellar ataxia with fever, Enteric fever forms an important and curable differential diagnosis. Short course steroid along with injectable antibiotics could probably shorten the duration of neurological illness.

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Authors

First Author – Virender Kumar Gehlawat, M.D., Assistant Professor, Department of Paediatrics, Pt. BhagwatDayal Sharma, PGIMS, Rohtak, Haryana. Email address: gehlawatv@gmail.com

Second Author – Rizwan S A, M.B.B.S.,Junior Resident,Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi. Email Address: sarizwan1986@gmail.com

Third Author –Vijay Silan, M.D., Senior Resident,Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi. Email Address: vijay.silan@gmail.com

Correspondence Author – Vijay Silan, M.D., Senior Resident, Centre for Community Medicine, All India Institute of Medical Sciences, New Delhi. Email Address: vijay.silan@gmail.com Mobile No. +919467820404