

Bell's Palsy and Cyclosporiasis: Causal or Coincidence?

Tirth Raj Ghimire, MSc

Department of Biology
Bagmati Modern College
Kathmandu, Nepal

Purna Nath Mishra, PhD

Central Department of Zoology
Tribhuvan University
Kathmandu, Nepal

Jeevan Bahadur Sherchand, PhD

Department of Microbiology and Parasitology
Institute of Medicine
Tribhuvan University Teaching Hospital
Kathmandu, Nepal

Laxmi Vilas Ghimire, MBBS

Institute of Medicine
Tribhuvan University Teaching Hospital
Kathmandu, Nepal

Address for correspondence

Tirth Raj Ghimire, MSc
Department of Biology
Bagmati Modern College
Kathmandu, Nepal
E-mail: ghimiretr@hotmail.com

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Bell's palsy, an idiopathic facial paralysis, is a common disease that causes important functional, aesthetic, and psychosocial disturbances in the patients.¹ Bell's palsy is characterized by the mouth sags, dribbling, taste impairment, and watery eye. The etiology of VIIth nerve palsy may be due to brainstem tumor, stroke, polio, cerebello-pontine angle lesions (acoustic neuroma, meningitis), otitis media, Ramsay Hunt Syndrome (herpes-zoster oticus), cholesteatoma, parotid tumors, trauma, sarcoid, Guillain-Barre, leprosy, Lyme disease etc.^{2,3} But Bell's palsy is idiopathic in nature. *Cyclospora cayetanensis* is a coccidian parasite that causes acute and chronic diarrhea in immunocompetent and immunocompromised patients.^{4,5,6,7,8} The main purpose of this paper is to report the Bell's palsy syndrome in a *Cyclospora* infected chronic diarrheal patient in this coccidian endemic area, Nepal.⁹

Case Report

A 27 year-old man had gastrointestinal illness five days after attending a feast at a friend's house. His symptoms were vomiting, diarrhea, and fever.

The etiology of Bell's palsy is unknown but is presumed to involve swelling of the seventh (facial) nerve due to immune or viral disease, resulting in ischemia and compression of the nerve at the point where it leaves the bony tissue. Biliary disease, Guillain-Barre syndrome, Reiter syndrome, acalculous cholecystitis, pulmonary infection and low hemoglobin concentration in the absence of efficient immune system have been reported as an extraintestinal complication of *Cyclospora* infection. We describe Bell's palsy in a chronic cyclosporiasis patient which is a rare occurrence.

Key words: Bell's palsy, Cyclosporiasis

He was evaluated clinically and was sent for routine investigations. His white cell counts were normal and routine stool microscopy and Widal test were negative. The patient was started on metronidazole 400 mg three times a day for 5 days along with some vitamins and rehydration solution. Two weeks later he started to have watery . His stool examination was done by direct wet mount at 2.5% potassium dichromate solution and formol-ether concentration methods. These tests gave the positive detection of *Cyclospora* parasites in the range of 1-3 oocysts per 400X. Bacteriologic tests of stool were negative. However, there was no detection of oocysts on the following two consecutive days. despite medications, he continued to have intermittent diarrhea. Three months later , when he woke up, he found that his left face was deviating towards right side. Besides facial asymmetry, other symptoms were eye exposure due to lack of eyelid closure, folding out (ectropion) of the lower eyelid, inability to smile properly. He couldn't wrinkle his forehead, whistle or blow out his cheek. A diagnosis of Bell's Palsy was made.

The patient was started on prednisolone and physiotherapy of the facial muscles. Over the ensuing two months he had mild improvement on his facial palsy but continued to have gastrointestinal symptoms. Repeat examination of his stool by formol-ether concentration and acid-fast staining was performed. *Cyclospora* in the range of 4-7 oocysts per 400X field were detected.

The patient continued physiotherapy and oral cotrimoxazole. Gradually he started to improve and in four months from the start of his symptoms, his facial palsy had improved completely. Stool examination again performed at this time was negative for *Cyclospora*.

Discussion

Bell's palsy, an idiopathic facial paralysis, is a common disease that causes important functional, aesthetic, and psychosocial disturbances in the patients.¹ The etiology is unknown but is presumed to involve swelling of the seventh (facial) nerve due to immune or viral disease, resulting in ischemia and compression of the nerve at the point where it leaves the petrous bone. It is characterized by weakness of the entire half of the face. The onset is usually abrupt and may be associated with much pain. The patient cannot control salivation or lacrimation, and in severe cases cannot close the eye on the affected side. Facial expression is distorted.³ Fifty-percent of patients will also experience sensory loss of the face, neck or tongue, and 90% will experience hyperacusis which is painful sensitivity to sound.¹⁰ Commonly prescribed medicine for this condition is prednisolone, though this is of unproven value.^{1,2,11,12,13}

Cyclospora cayentanensis is a coccidian protozoan parasite which has now been identified worldwide in the feces of both immunocompetent and immunocompromised patients with diarrhea.^{4,5} It causes relapsing, non-bloody, watery and self limiting diarrhea with duration of 4 weeks to 18 months.^{4,5,6,7,8,9} The oocysts have been detected in the asymptomatic individuals in *Cyclospora* endemic region such as Nepal. The oocysts of this parasite are excreted in low numbers from an infected patient.^{4,5} The extra-intestinal complications of *Cyclospora*, such as, biliary disease (cholangitis)¹⁴, Guillain-Barre syndrome or acute febrile polyneuritis¹⁵, Reiter syndrome [(Reactive arthritis syndrome) (RAS)]¹⁶, acalculus cholecystitis¹⁷, pulmonary infection¹⁸ and low hemoglobin concentration in the absence of efficient immune system¹⁹ have been reported in some chronic cyclosporiasis patients.

The duration of facial involvement was about four months in our patient. Partial facial paralysis is usually resolved within several months. Likelihood of complete recovery after total paralysis varies from 20% to 90%.³ And the duration of diarrhea caused by *Cyclospora* was about 17 months and for two months or so the patient had co-existent Bell's palsy and *Cyclospora* infection. Careful review of the literature revealed that this occurrence is extremely rare. This could be due to an autoimmune basis similar to the occurrence of Guillain-Barre syndrome. Presence of sole *Cyclospora* in his stool and recovery of his protracted diarrhea and facial paralysis after treatment with cotrimoxazole, the involvement of *Cyclospora* in

chronic diarrheal patients to cause Guillain-Barre syndrome,¹⁵ pulmonary infection,¹⁸ low hemoglobin concentration,¹⁹ in previous studies; we assume that Bell's palsy was the result of the chronic *Cyclospora* infection in this patient.

Conclusions

This is the first reported case of Bell's palsy following chronic *Cyclospora* infection. Although this syndrome in this patient could have been coincidental, we propose *Cyclospora* as another infectious trigger for Bell's palsy.

References

1. Ying LI, Fan-rong LIANG, Shu-guang YU, et al: Efficacy of acupuncture and moxibustion in treating. **CMJ**, **117**: 1502-1506, 2004
2. Hope RA, Longmore JM, Hodgetts TJ, et al: Oxford Handbook of Clinical Medicine, Oxford University Press, India, 1994
3. Thomas CL: Taber's Cyclopedic Medical Dictionary, 1993. ISBN: 0-8036-8313-8 (Davis FA)
4. Ortega YR, Sterling CR, Gilman RH, et al: *Cyclospora* species: a new protozoan pathogen of humans. **N Engl J Med** **328**: 1308-1312, 1993
5. Ghimire TR: Cyclosporiasis in HIV and Non-HIV patients: A study in Kanti Children's Hospital, Maharajgunj and Sukra Raj Tropical and Infectious Disease Hospital, Teku, Kathmandu, Nepal. Dissertation: Master's Degree in Zoology, Central Department of Zoology, Tribhuvan University, Kirtipur, Kathmandu, Nepal, 2004
6. Shlim DR, Cohen MT, Eaton M, et al: An alga-like organism associated with an outbreak of prolonged diarrhea among foreigners in Nepal. **Am J Trop Med Hyg** **45**: 383-389, 1991
7. Outbreaks of diarrheal illness associated with cyanobacteria (blue-green algae)-like bodies-Chicago and Nepal, 1989 and 1990. **MMWR Morb Mortal Wkly Rep** **40**: 325-327, 1991
8. Ooi WW, Zimmerman SK, Needham CA: *Cyclospora* species as a gastrointestinal pathogen in immunocompetent hosts. **J Clin Microbiol** **33**: 1267-1269, 1995
9. Ghimire TR, Mishra PN, Sherchand JB: The seasonal outbreaks of *Cyclospora* and *Cryptosporidium* in Kathmandu, Nepal. **JNHRC** **3(1)**: 39-48, 2005
10. Jabor MA, Gianoli G: Management of Bell's palsy. **Journal Louisiana State Medical Society** **148**: 279-283, 1996
11. Adour KK, Ruboyanes JM, Von Doersten PG, et al: Bell's palsy treatment with acyclovir and prednisone compared with prednisone alone: a double-blind, randomized, controlled trial. **Ann Otol Rhinol Laryngol** **105**: 371-378, 1996
12. Wolf SM, Wagner JH, Davidson S, et al: Treatment of Bell's palsy with prednisone: a

- prospective randomized study. **Neurology** **28**: 158-161, 1978
13. May M, Wette R, Hardin WB: The use of steroids in Bell's palsy: a prospective controlled study. **Laryngoscope** **86**:1111-1112, 1976
 14. Sifuentes-Osornio J, Porrascortes G, Bendall RP, et al: *Cyclospora cayetanensis* infection in patients with and without AIDS: Biliary disease as another clinical manifestation. **Clin Dis** **21**:1092-1097, 1995
 15. Richardson RF Jr, Remler BF, Katirji B, et al: Guillain-Barre Syndrome after *Cyclospora* infection. **Muscle and Nerve** **21**: 669-671, 1998
 16. Connor BA, Johnson EJ, Soave R: Reiter syndrome following protracted symptoms of *Cyclospora* infection. **Emerg Infect Dis** **7**: 453-454, 2001
 17. Zar FA, El-Bayoumi E, Yungbluth MM: Histological proof of acalculous cholecystitis due to *Cyclospora cayetanensis*. **Clin Infect Dis** **33**: 140-141, 2001
 18. Di Gliullo AB, Cribari MS, Bava AJ, et al: *Cyclospora cayetanensis* in sputum and stool samples. **Rev Inst Med Trop S Paulo** **42**:115-117, 2000
 19. Ghimire TR, Mishra PN: Intestinal parasites and hemoglobin concentration in the people of two different areas of Nepal. **JNHRC** **3**: 1-7, 2005
 20. Smith SA: Peripheral neuropathies in children. **In: KF Swaiman. Pediatric Neurology: Principles and Practice**. 2nd ed. St. Louis, Missouri: Mosby-Year book, Inc. 1429-1452, 1994