Bilateral Bell Palsy and Acute HIV Type 1 Infection: Report of 2 Cases and Review

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Two adult patients who presented to a hospital with bilateral facial Bell palsy who were also experiencing human immunodeficiency virus type 1 seroconversion are described. Ten additional cases retrieved from the literature are also reviewed. Bell palsy appeared a median of 15 days after the beginning of the clinical disease, and aseptic meningitis was an invariable concomitant of facial neuropathy. All but 1 patient (8.3%) recovered without sequelae.

It is estimated that 40%–90% of patients with primary HIV-1 infection experience an acute retroviral syndrome [1, 2]. Patients typically present with fever, myalgia, headache, rash, and lymphadenopathy, and the illness can easily be mistaken for mononucleosis, influenza, or other acute illness [1, 2]. Occasionally, neurologic complications—including aseptic meningitis, encephalopathy, neuropathy, myelopathy, and brachial neuritis—develop in association with primary HIV-1 infection. Except for encephalopathy, which occurs simultaneously during the acute phase of HIV-1 infection, the other manifestations tend to be observed ~3 weeks after the onset of the primary illness [3]. Bell palsy has been reported during these episodes and has also been observed in patients who are already known to be infected with HIV-1 [4, 5]. However, facial diplegia experienced at the time of seroconversion is much more infrequent, and was first reported by Wechsler and Ho in 1989 [6].

We report 2 patients with bilateral Bell palsy who also had acute retroviral syndrome with aseptic meningitis, and we review the literature to delineate such unusual neurologic involvement associated with acute HIV-1 infection.

Case reports. Patient 1 was a 32-year-old heterosexual man who was admitted to the hospital because of fever and confusion. His past medical history was unremarkable. Fifteen days before admission to the hospital he experienced fever, arthralgias, frontal headache, and a maculopapular rash. Treatment with cefuroxime was initiated, without improvement of symptoms. An examination of the patient at admission revealed a maculopapular rash with planar involvement. The findings of the rest of the physical examination, which included a neurologic examination, were unremarkable. Blood biochemistry results, RBC count, and platelet count were within the normal limits. The patient’s WBC count was 10 × 10^6 cells/L, with 50% neutrophils, 36% lymphocytes, and 13% monocytes. Blood cultures and serological examinations for infection with cytomegalovirus, the hepatitis viruses, Epstein-Barr virus, Toxoplasma gondii, Brucella species, and syphilis were all negative. However, ELISA and Western blot analyses were positive for HIV-1 infection. Analyses of CSF samples revealed a glucose content of 2.1 mmol/L (in blood samples, glucose content was 5 mmol/L), a protein content of 1.77 g/L, and 31 lymphocytes/mm3. A Gram-stained smear and culture of CSF for bacteria and mycobacteria were also negative. The CD4+ cell count was 825 cells/mm3 (25%), and the CD8+ cell count was 1683 cells/mm3 (51%). Twenty-four h after admission, the patient developed bilateral facial palsy. No viral load measurement was available at that time. The patient’s condition steadily improved and experienced complete resolution of facial palsy after 3 months.

Patient 2 was a 34-year-old heterosexual man with a history of hepatitis B and epilepsy who was admitted to the hospital because of fever and odynophagia that started 10 days earlier. A nonpruritic maculopapular rash appeared 4 days before hospital admission, and on the day of admission he had headache, nausea, vomiting, and generalized seizures. An examination of the patient at admission revealed that he was febrile (temperature, 38°C) and had cervical, axillary, and groin lymphadenopathies, a generalized rash involving the palms and soles, and hepatosplenomegaly. The patient’s WBC count was 9 × 10^6 cells/L (50% neutrophils, 37% lymphocytes, and 8% bands), and he had an aspartate transaminase level of 204 U/L (normal level, <57 U/L), an alanine transaminase level of 206 U/L (normal level, <41 U/L), a lactate dehydrogenase level of 3000 U/L (normal level, 240–480 U/L), a γ-glutamyl transpeptidase level of 489 U/L (normal level, <54 U/L), and an alkaline phosphatase level of 653 U/L (normal level, 40–130 U/L). A CSF
sample analysis revealed a glucose content of 2.8 mmol/L (glucose content in plasma sample, 6.0 mmol/L), a protein content of 2.29 g/L, an adenosine deaminase level of 10.5 U/L, and 34 lymphocytes/mm³ (90% CD8⁺ lymphocytes). A Gram-stained smear, culture, and PCR of blood samples for herpes simplex viruses 1 and 2 and enterovirus were all negative. Two blood sample cultures also had negative results. Serological examinations for cytomegalovirus, Epstein-Barr virus, hepatitis viruses A, C, and D, human herpesvirus 6, Toxoplasma species, typhoid fever, and HIV-1, which were requested on admission, all had negative findings. CT of the head did not reveal any abnormality.

Three days after hospital admission, patient 2 developed a bilateral peripheral facial palsy. A new serological examination had positive findings for HIV-1 infection. The CD4⁺ cell count was 586 cells/mm³ (8%) and the CD8⁺ cell count was 6011 cells/mm³ (82%). Serological examinations for Borrelia species, Brucella species, hepatitis E virus, and adenovirus all had negative findings. The HIV-1 load was 17 × 10⁶ (7.2 log₁₀) copies/mL. The patient’s condition steadily improved over the next 3 months, until the findings of a physical examination were normal except for a moderate bilateral facial palsy that completely resolved after 6 months.

Literature review. From 1989 to date, 10 patients with bilateral Bell palsy associated with acute HIV-1 infection have been described in the literature (table 1) [4, 6–14]. Another case [15] could not be included in this analysis because of the lack of clinical information. Two additional cases (0.08%) that occurred among the 2586 patients who have received a diagnosis of HIV-1 infection in our hospital since 1985 are also reported. However, in our patient 1, the diagnosis of HIV-1 is only very likely (and not confirmed), because no seroconversion could be documented and because HIV-1 RNA quantification was not yet available at that time (1994). Of the 10 patients described in the literature and our 2 patients, whose ages ranged from 21–73 years, 8 (66.7%) were men and 4 (33.3%) were women (table 1). Sexual transmission was the most frequent means of acquiring HIV-1 infection (88.9% of cases). The median interval between the onset of symptoms of HIV-1 infection and the development of Bell palsy was 15 days (range, 2–180 days). Aspecific meningitis was present in all the patients in the present review who underwent testing for it. A flu-like illness marked by fever, myalgia, lymphadenopathy, diarrhea, and a rash usually precedes the onset of facial palsy by 3 weeks [4, 21], which was observed in most of the patients in this review (table 1).

When associated with acute HIV-1 infection, transient facial nerve paralysis precedes seroconversion by 4–6 weeks [5], thereby complicating the early diagnosis of HIV-1 infection in patients who present to a health care facility with facial nerve palsy. Because the onset of facial weakness may precede HIV-1 seroconversion, patients who are at risk for HIV-1 infection but who have a negative HIV-1 test result should undergo repeat testing after 6 weeks [7]. Thus, the diagnostic analysis of facial nerve weakness may facilitate the initial diagnosis of HIV-1 infection. Facial nerve paralysis has a high predictive value for HIV-1 infection among populations who have high rates of seroconversion [22, 23]. Therefore, serological testing for HIV-1 infection should be included in the routine evaluation of facial nerve paralysis, especially in patients who engage in high-risk behaviors or who live in areas of high endemicity [3, 23]. The prevalence of HIV-1 infection among patients with idiopathic facial nerve paralysis is disproportionately high among endemic populations in Africa, accounting for 25% of cases in Kenya [22] and 69% of cases in central Africa [3]. The clinician’s suspicion of HIV-1 infection should be further increased by the presence of bilateral facial nerve paralysis, a recent flu-like illness, and Ramsay-Hunt syndrome with disseminated herpes zoster.

The pathogenic mechanisms of bilateral Bell palsy in patients who have acute HIV-1 infection are not completely understood. Among the operating mechanisms, a direct nerve lesion caused by HIV-1 or an immunologically mediated inflammatory polyradiculopathy, similar to a regional Guillain-Barré syndrome, have been proposed [10, 12]. The latter seems the most likely,
Table 1. Clinical characteristics of 12 patients with bilateral Bell palsy during acute HIV-1 infection.

<table>
<thead>
<tr>
<th>Case patient</th>
<th>Year</th>
<th>Age, years (sex)</th>
<th>Means of acquisition of HIV-1 infection</th>
<th>Interval between onset of symptoms of HIV-1 infection and onset of palsy, days</th>
<th>Rash</th>
<th>Aseptic meningitis</th>
<th>CD4$^{+}$ T cell count, cells/mm$^3$</th>
<th>CD8$^{+}$ T cell count, cells/mm$^3$</th>
<th>Viral load, log$_{10}$ copies/mL</th>
<th>Other neurologic symptoms</th>
<th>Outcome (recovery time, weeks)</th>
<th>Antiretroviral therapy</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 [6]</td>
<td>1989</td>
<td>45 (M) MSM</td>
<td>Absent</td>
<td>N/R</td>
<td>15</td>
<td>Absent</td>
<td>770</td>
<td>1550</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (24)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>3 [7]</td>
<td>1990</td>
<td>40 (F) HSX</td>
<td>Absent</td>
<td>Present</td>
<td>15</td>
<td>Present</td>
<td>N/R</td>
<td>1542</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (3)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>4 [8]</td>
<td>1993</td>
<td>32 (M) MSM</td>
<td>Absent</td>
<td>Present</td>
<td>35</td>
<td>Present</td>
<td>718</td>
<td>2393</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (N/R)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>5 [9]</td>
<td>1993</td>
<td>21 (M) IDU</td>
<td>Absent</td>
<td>Present</td>
<td>15</td>
<td>Present</td>
<td>N/R</td>
<td>N/R</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (8)</td>
<td>None Bradypalsy</td>
<td>…</td>
</tr>
<tr>
<td>6 [10]</td>
<td>1995</td>
<td>43 (F) N/R</td>
<td>Absent</td>
<td>Present</td>
<td>N/R</td>
<td>Present</td>
<td>404</td>
<td>N/D</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (N/R)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>7 [11]</td>
<td>2000</td>
<td>37 (M) N/R</td>
<td>Absent</td>
<td>Present</td>
<td>N/R</td>
<td>Present</td>
<td>533</td>
<td>1134</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (N/R)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>8 [12]</td>
<td>2002</td>
<td>73 (M) MSM</td>
<td>Absent</td>
<td>Present</td>
<td>45</td>
<td>Present</td>
<td>513</td>
<td>2563</td>
<td>5.0</td>
<td>None</td>
<td>Persistent paresia</td>
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<td>…</td>
</tr>
<tr>
<td>9 [13]</td>
<td>2003</td>
<td>29 (F) HSX</td>
<td>Absent</td>
<td>Present</td>
<td>N/R</td>
<td>Present</td>
<td>N/D</td>
<td>N/D</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (N/R)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>10 [14]</td>
<td>2006</td>
<td>26 (M) HSX</td>
<td>Absent</td>
<td>Present</td>
<td>22</td>
<td>Present</td>
<td>327</td>
<td>N/R</td>
<td>350,000</td>
<td>None</td>
<td>Recovery (N/R)</td>
<td>AZT, 3TC, LPV/r</td>
<td>…</td>
</tr>
<tr>
<td>PR 1</td>
<td>1994</td>
<td>32 (M) HSX</td>
<td>Absent</td>
<td>Present</td>
<td>15</td>
<td>Present</td>
<td>825</td>
<td>1683</td>
<td>N/D</td>
<td>None</td>
<td>Recovery (12)</td>
<td>None</td>
<td>…</td>
</tr>
<tr>
<td>PR 2</td>
<td>2006</td>
<td>34 (M) HSX</td>
<td>Absent</td>
<td>Present</td>
<td>13</td>
<td>Present</td>
<td>568</td>
<td>6011</td>
<td>7.2</td>
<td>None</td>
<td>Recovery (24)</td>
<td>None Seizures</td>
<td>…</td>
</tr>
</tbody>
</table>

**NOTE.** AZT, zidovudine; HSX, heterosexual intercourse; IDU, injection drug use; LPV/r, lopinavir-ritonavir; MSM, men who have sex with men; N/D, not done; N/R, not reported; PR, present report; 3TC, lamivudine.
given the similarities with other peripheral neuropathies that are associated with HIV-1 seroconversion, the high degree of immunological activation that characterizes symptomatic acute HIV-1 infection, and the CD8⁺ pleocytosis observed in 1 of our patients [24]. Inflammation associated with autoimmune demyelination of neurons in response to infection of the central nervous system by HIV-1 can result in facial nerve compression in the narrow segments of the fallopian canal [24].

Bilateral facial paralysis has a much higher incidence of systemic causes than unilateral palsy and should spur a diligent search for an underlying cause [25]. The diseases most commonly associated with bilateral facial paralysis are Guillain-Barré syndrome, multiple idiopathic cranial neuropathies, brain stem encephalitis, benign intracranial hypertension, syphilis, leukemia, sarcoidosis, Lyme disease, Melkerson-Rosenthal syndrome, and bacterial meningitis [26, 27]. The possibility of intrapontine and pre pontine tumor should also be considered [27]. Because one of the most frequently entertained diagnoses when examining a patient with bilateral facial Bell palsy is sarcoidosis, it should be recalled that angiotensin-converting enzyme levels can also be increased in acute retroviral syndrome [28], as patient 2 exemplifies. To our knowledge, there have been no controlled studies of antiretroviral therapy in HIV-1–infected patients. However, during early HIV-1 infection—especially in cases of bilateral facial paralysis—the CD8⁺ pleocytosis observed in 1 of our patients [24]. Inflammation associated with autoimmune demyelination of neurons in response to infection of the central nervous system by HIV-1 can result in facial nerve compression in the narrow segments of the fallopian canal [24].

The present review indicates that acute retroviral syndrome should also be included in the differential diagnosis of bilateral facial Bell palsy, especially in patients who are sexually active who have had a prior acute febrile illness with rash and aseptic meningitis.

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References