

# Parotid Swelling During Human Immunodeficiency Virus Infection

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• In Europe and in the United States, bilateral parotid gland swelling has been observed as a sign of human immunodeficiency virus (HIV) infection in children, but it has not been associated with HIV infection in adults. We observed a chronic parotid gland swelling in nine HIV-seropositive patients during a nine-month period in Kinshasa, Zaire. Parotid gland enlargement was bilateral in seven patients (78%), slightly painful in seven patients (78%), and painless in two patients (22%). No evidence of inflammation was observed around Stensen's duct. One of the two patients in whom a parotid gland biopsy was performed had a malignant lymphoma of the large-cell, histiocytic type. In the other patient, the parotid gland showed normal morphology with minor inflammation. Among 284 adults and 40 children with symptomatic HIV infection, chronic parotid gland enlargement was observed in none of the patients. However, two (0.7%) of the adults presented with an acute pyogenic parotitis. Further studies are needed to determine whether parotid gland enlargement is associated with HIV infection.

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Bilateral parotitis has been described as a sign of human immunodeficiency virus (HIV) infection in children,<sup>1,2</sup> but it has not been described in adults. In April 1985 at Mama Yemo Hospital (MYH), Kinshasa, Zaire, we examined two patients with HIV infection who presented with chronic bilateral parotid swelling. Subsequently, consecutive patients with chronic bilateral parotid gland swelling seen at the department of internal medicine of MYH were screened for HIV antibodies, and a group of HIV-infected patients was examined for the presence of parotid gland enlargement.

## PATIENTS AND METHODS

Mama Yemo Hospital is a 2000-bed hospital where, each weekday, more than 2000 patients are seen at outpatient clinics. During the period from April to December 1985, 14 patients with chronic bilateral parotid gland swelling were referred to us. Also, 284 hospitalized adults and 40 hospitalized children (aged 9 months to 12 years) with confirmed symptomatic HIV infection consecutively seen at MYH were examined for the presence of a parotid gland enlargement.

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Presence of HIV antibody was determined by a commercially available enzyme-linked immunosorbent assay (ELISA) (Organon Teknika, Oklahoma City). A serum was considered positive for antibody to HIV if it was repeatedly reactive on two separate ELISA assays together with a positive Western blot. The Western blot immunoassays were performed on commercially available strips (Organon Teknika [Oss, the Netherlands]). A sample was considered to be positive if a reaction with p24 and/or gp41 was observed, accompanied by another band previously associated with HIV infection.

The IgM antibodies to cytomegalovirus (CMV) and mumps were determined by solid-phase ELISA methods. The IgM antibodies to the viral capsid antigen of Epstein-Barr virus were determined by an immunofluorescence technique.

An open parotid gland biopsy specimen was obtained from two HIV-seropositive patients with a very large bilateral parotid gland swelling. Parotid gland biopsy specimens were fixed in buffered formaldehyde and processed for light microscopy and stained with hematoxylin-eosin. Frozen tissue of the parotid gland biopsy specimen of one patient was processed for immunofluorescence staining using CMV monoclonal antibodies (IgG1 mouse monoclonal antibodies recognizing a 68 000-kilodalton antigen of CMV) and using HIV monoclonal antibodies against p55-18 of the HIV virus.<sup>3</sup>

## RESULTS

Of 14 patients referred with chronic bilateral parotid gland swelling, nine (64%) were HIV seropositive (Table), and five (36%) were HIV seronegative. Of the seronegative patients, two patients had diabetes mellitus associated with malnutrition, and two

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patients had tuberculosis. Only one patient had no underlying disease. In four (44%) of the seropositive patients, the parotid gland swelling occurred at the onset of the patients' illness. All seropositive patients were in good nutritional condition when parotid gland swelling developed. Bilateral symmetric parotid enlargement was observed in seven (78%) of the seropositive patients. None of the seronegative patients compared with seven (78%) of the seropositive patients considered their parotid swelling to be painful (Fisher's exact test,  $P = .06$ ) though pain, if present, was considered to be minor. In the seropositive patients, parotid gland swelling had been present for a mean of eight months (range, three to 24 months). One seropositive patient had two episodes of bilateral parotid gland swelling, each lasting three weeks. None of the patients had clinical evidence of inflammation around Stensen's duct. None of the five seropositive patients tested had IgM antibodies against CMV, Epstein-Barr virus, or mumps. None of the patients had a syndrome of parotitis associated with lacrimal adenitis, uveitis, or a cranial nerve palsy. There was no evidence of drug-induced parotitis, chronic alcoholism, cirrhosis, or Sjögren's syndrome.

Among 284 patients with symptomatic HIV infection, chronic parotid gland enlargement was observed in none of them, but acute pyogenic parotitis developed in two patients (*Staphylococcus aureus* was isolated in one case).

None of a group of 40 hospitalized children (mean age, 3 years) with symptomatic HIV infection presented with chronic parotid gland swelling.

#### REPORT OF CASES

**CASE 1.**—In January 1983, a bilateral parotid swelling together with a generalized pruritic papular eruption developed in a 26-year-old man. Subsequently, he lost 18% of his normal body weight and experienced several prolonged episodes of diarrhea and fever. The degree of parotid gland swelling fluctuated slightly during the course of his illness. When the patient was seen in March 1985, he was found to be HIV seropositive and presented with ophthalmic varicella zoster infection and oral candidiasis. Both parotid glands were marked-

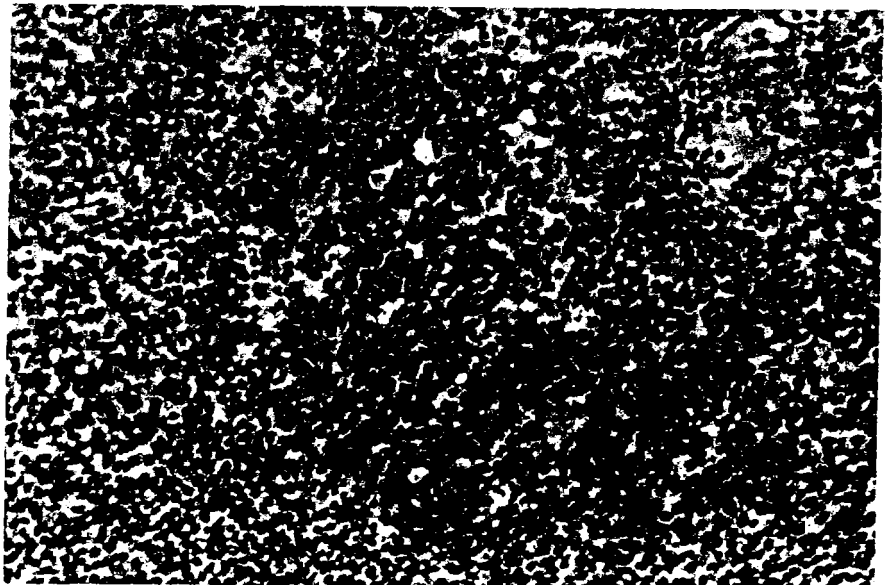
Clinical Features of Nine Human Immunodeficiency Virus-Seropositive Patients in Africa With Chronic Parotid Swelling					
Patient No./ Age, y/Sex	Clinical Findings	Parotid Enlargement			
		Duration, mo	Degree*	Symmetrical	Painful
1/26/F	Severe weight loss,† diarrhea/fever, herpes zoster, oral candidiasis, pruritic papular eruption	51	++	Yes	Yes
2/41/F	Severe weight loss, polyadenopathy,‡ pneumopathy, pruritic papular eruption	25	++	Yes	Yes
3/29/M	Severe weight loss, polyadenopathy, tuberculosis, esophageal candidiasis	2 periods of 3 weeks	++	No	Yes
4/40/M	Severe weight loss, herpes zoster, polyadenopathy, pneumopathy	18	+	Yes	No
5/28/F	Severe weight loss, chronic diarrhea, pruritic papular eruption	24	+	Yes	Yes
6/31/M	Slight weight loss, diarrhea/fever, recurrent sinusitis, herpes zoster, polyadenopathy	8	+	Yes	Yes
7/27/F	Severe weight loss, diarrhea, pruritic papular eruption	4	+	Yes	Yes
8/34/F	Severe weight loss, herpes zoster, episodes of fever	5	++	Yes	No
9/44/F	Severe weight loss, polyadenopathy, oral candidiasis	3	++	No	Yes

\*Two plus signs indicate obvious by visual inspection; one plus sign, hardly visible, easily palpable.

†Weight loss of more than 10% of normal body weight.

‡Lymph nodes more than 1 cm in diameter in at least two extralingual noncontiguous sites.

Parotid gland biopsy specimen obtained from human immunodeficiency virus-seropositive patient (patient 2). Malignant lymphoid cells of large cell histiocytic type (hematoxylin-eosin,  $\times 120$ ).



ly swollen and slightly painful on palpation. A biopsy specimen of the left parotid gland showed normal structure and mild plasmacytic and lymphocytic inflammatory reaction localized along the excretory canals. Histologically, no viral inclusion bodies were found. No evidence of CMV or HIV virus was seen in the parotid gland tissue by immunofluorescent monoclonal antibodies.

**CASE 2.**—Bilateral parotid gland swelling developed in a 41-year-old woman in July 1984. The parotid glands were markedly enlarged and slightly painful. At that time, she had already lost 29% of her normal body weight and complained of weakness and anorexia. A parotid gland biopsy specimen showed normal parotid gland tissue infiltrated by malignant lymphoid cells of the large-cell histiocytic type (Figure). In February 1985, she was found to be seropositive and a generalized papular pruritic eruption had developed. On physical examination in March 1985, both parotid glands were severely swollen and painful on palpation. Polyadenopathy was detected. She progressively lost weight and died in February 1986 of a pulmonary infection.

**CASE 3.**—In 1981, recurrent episodes of sinusitis developed in this 31-year-old man. In 1982, a varicella zoster infection developed, and since then he has had fatigue, anorexia, episodes of fever, diarrhea, and recurrent oral aphthous lesions. In January 1985, bilateral parotid gland swelling appeared. By August 1985, he had lost 8% of his normal body weight and had polyadenopathy. Both parotid glands were moderately swollen and painful on palpation. The patient was found to be HIV seropositive.

## COMMENT

Asymptomatic enlargement of the parotid glands has been reported in chronic malnutrition,<sup>3</sup> cirrhosis of the

liver,<sup>4</sup> diabetes mellitus,<sup>5</sup> anorexia nervosa,<sup>6</sup> bulimia,<sup>7</sup> lead and mercury intoxication,<sup>8</sup> ingestion of excessive laundry starch,<sup>9</sup> and as a side effect of some medications, such as thiocyanate and thiouracil.<sup>10</sup> Parotid gland enlargement is also observed in Sjögren's syndrome, sarcoidosis, and certain other granulomatous disorders.<sup>9,11</sup> Bilateral painless parotid gland enlargement is common in many areas in the tropics and has been associated with a low-protein, high-carbohydrate diet.<sup>12</sup>

In our series of patients with parotid gland enlargement, more patients were HIV seropositive than seronegative. However, as our study was performed in the department of internal medicine of MYH it is probable that many asymptomatic HIV-seronegative patients with parotid gland swelling consulting in outpatient departments were not referred to us.

Of 284 adults with symptomatic HIV infection, an acute purulent parotitis developed in two of them. Bacterial parotitis occurs in debilitated patients with severe underlying diseases<sup>11</sup> and, therefore, may develop during the course of HIV illness.

A lymphoma (probably a B cell lymphoma) infiltrating both parotid glands developed in one of the HIV-infected patients. B cell lymphomas are a known complication of the acquired immunodeficiency syndrome (AIDS) in the United States and in Europe.<sup>13</sup> The frequency of such complication among AIDS patients in Africa is unknown.

The cause of the parotid gland swelling in the majority of HIV-seropositive patients was unclear. Eight

(89%) of the HIV-seropositive patients with chronic parotid gland enlargement presented with severe weight loss by the time they were first seen by us. Therefore, nutritional disorders could have played a major role in causing their parotid gland swelling. However, these patients reported that their parotid gland swelling started before severe weight loss developed. Moreover, the biopsy specimen in case 1 did not demonstrate the histologic features characteristic of nutritional mumps, such as atrophy of the acini, fatty infiltration, and a mild-to-moderate fibrosis without a chronic inflammatory cell infiltrate.<sup>14</sup>

In contrast with what has been observed in the United States<sup>1</sup> and in Europe,<sup>2</sup> we did not observe a single case of parotid gland swelling in children with HIV infection.

Human immunodeficiency virus has been isolated from saliva in AIDS patients.<sup>15</sup> Further studies are needed to determine if the virus may be present in the parotid glands and whether this parotid gland enlargement observed in HIV-infected adults is associated with such infection.

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