

## CASE REPORT

# Immune Reconstitution Inflammatory Syndrome and Shingles Associated with a Combined Paralysis of Three Oculomotor Nerves: A Case Report

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## ABSTRACT

**BACKGROUND:** In countries with high prevalence of HIV/AIDS infection, particularly in black Africa, shingles is one of the main opportunistic infections during immunosuppression due to AIDS in young patients. If immunological weakness is important, usually when the CD<sub>4</sub> cell count is less than 100 cells/mm<sup>3</sup>, the risk of inflammatory reactions in the first three months after initiating of antiretroviral treatment (ART) is very high. This inflammatory reaction is called immune reconstitution inflammatory syndrome (IRIS). This observation reports the first documented case of IRIS with V<sub>1</sub> shingles in a young HIV patient at University Hospital of Brazzaville.

**CASE DETAILS:** A 40 years old patient was seen for a pain of the right side of the face and a complete immobility of the eyeball. The diagnosis of V<sub>1</sub> shingles with a pan uveitis, and a paralysis of III, IV and VI nerves was made. The patients HIV status was positive and CD<sub>4</sub> cell count was 150 cells/mm<sup>3</sup>. After two months of evolution under ART with a CD<sub>4</sub> count of 850 cells /mm<sup>3</sup>, the symptomatology was quickly complicated by significant inflammation causing a phtisis bulbi.

**CONCLUSION:** CD<sub>4</sub> cells count is an important indicator in the HIV/AIDS therapy. In some major forms of IRIS, momentary pause of anti retroviral treatment is sometimes necessary.

**KEYWORDS:** AIDS, Immune reconstitution Inflammatory Syndrome, Shingles, Oculomotor Nerves Paralysis

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## INTRODUCTION

Infection with varicella zoster virus (VZV), which is a member of the herpes virus family, is relatively common. In general, in childhood VZV causes chickenpox, and in adults it recurs to cause shingles. After the signs and symptoms of chickenpox resolve, VZV goes into a state of latent infection inside nerve cells (1). It is generally held in the check by the immune system. However, as the immune system weakens with age, VZV can become reactivated, resulting in shingles. Shingles is most commonly seen in people over the age of 50. However, there are cases when the immune system becomes weakened, such as HIV/AIDS context that can allow the reactivation of VZV leading to shingles

even in younger patient (1, 2). If immunological weakness is important, usually when the CD<sub>4</sub> cell count is less than 100 cells/mm<sup>3</sup>, the risk of inflammatory reactions in the first three months after initiating antiretroviral treatment (ART) is very high. This inflammatory reaction is called IRIS (3-5). We report the first documented case of IRIS and V<sub>1</sub> shingles, associated with a combined paralysis of three oculomotor nerves in a 40 year old HIV patient at the University Hospital of Brazzaville.

## CASE REPORT

A 40 years old patient was seen for a pain of the right side of the face evolving for nearly a week.

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He described the pain as burning electrical discharge encompassing the eye, the ear and the cheek.

The review noted:

- Bullous and necrotic lesions along the path of the right V<sub>1</sub> (Figure 1);
- Hutchinson's sign: presence of the above described lesions at the tip of the nose,
- Right eyelid ptosis;
- Complete ophthalmoplegia: right eye was fixed in the primary position regardless of the direction taken by the left eye (Fig. 2 and 3);
- Anterior granulomatous uveitis; and
- Intra ocular pressure (IOP): 25 mmHg.
- The review of the left eye was normal (IOP = 12 mmHg).

The HIV serology was positive with a CD<sub>4</sub> cell count equal to 150 / mm<sup>3</sup>. An ART had been introduced (Lamivudine, Zidovudine, and Nevirapine). The treatment of uveitis was as follow:

- Valaciclovir oral route 1000 mg: three time a day one week;
- Acetazolamide oral route 250mg twice a day one week;
- Atropine 1% eye drops twice a day two weeks;

Corticosteroids eye drops in decreasing doses were introduced one week after the beginning of treatment for a month. For the balance of blood potassium, one banana dessert a day for seven days was recommended.



**Figure 1:** right III nerve paralysis (eyelid ptosis) and right V<sub>1</sub> shingles with Hutchinson's sign in HIV patient



**Figure 2:** paralysis of rights III, IV nerves and right V<sub>1</sub> shingles in HIV patient



**Figure 3:** right VI nerve paralysis and right V<sub>1</sub> shingles in HIV patient

The evolution was favorable in the first month, marked by the disappearance of pain, healing of skin lesions and normalization of IOP. For no apparent reason, the situation completely changed at the beginning of the second month. The installation of a non-granulomatous pan uveitis that had evolved rapidly in three weeks in a state of blindness due to a phtisis bulbi.

The rapid improvement of CD<sub>4</sub> count excluded the hypothesis of ART failure. The diagnosis of IRIS was retained.

## DISCUSSION

The goal of antiretroviral (ARV) therapy in HIV/AIDS is immune reconstitution. However, an aberrant manifestation of this effect sometimes occurs. IRIS also known as immune restoration disease. This syndrome is usually accompanied by an increase in CD<sub>4</sub> cell count and/or a rapid decrease in viral load. Although most cases of IRIS occur in patients who have low CD<sub>4</sub> counts and

high viral load levels when ARV therapy is initiated, IRIS can occur at any CD<sub>4</sub> count (4, 5). The time of presentation is usually within the first four to eight weeks after initiation of ARV therapy. However, IRIS occurred many weeks after this initiation (3, 4). After immune reconstitution, inflammatory reactions to many pathogens have been described, including mycobacterium, fungi, virus and bacteria. IRIS that involves worsening of some malignancies, including Kaposi's sarcoma and autoimmune phenomena have also been documented (6). Epidemiologic data regarding IRIS are variable and depend largely on the incidence and types of infections that patients have at the time of initiation of ARV therapy. The pathogenesis of IRIS is largely speculative. Although one common aspect of IRIS cases is a significant increase in CD<sub>4</sub> cells after initiation of ARV therapy in patients who has low CD<sub>4</sub> cells prior to treatment. The pathogenesis of the inflammatory response may not be the CD<sub>4</sub> cell increase. Patients who develop IRIS may have preexisting perturbations in their T-regulatory cell profile. The proinflammatory and regulatory responses, such as cytokine imbalances, may significantly contribute to onset of this syndrome, particularly when ARV treatment is very active against HIV (4). IRIS may also be more severe in patients with a higher burden of organism, which also suggests that antigen load may play a role (6, 7).

IRIS symptoms range from mild to severe. The presentation of IRIS varies depending on the underlying opportunistic infections or illness. The spectrum of signs and symptoms of IRIS often poses a challenge to diagnosis. The etiologic diagnosis of IRIS is based on clinical judgment, and multiple diagnoses can be present. The somewhat characteristic presentations of many opportunistic infections may aid in the diagnosis of IRIS. In case of VZV infection, it may act VZV reactivation after initiation of ARV therapy or a worsening of symptoms (3-7). Prevention of complications associated with IRIS involves careful monitoring, particularly in patients with low CD<sub>4</sub> counts and a past or current history of co-infections. After initiating ARV therapy, clinicians should be alert to the possibility of IRIS as CD<sub>4</sub> cell counts are restored. Clinicians should initiate symptomatic treatment and supportive care for

patients with IRIS. In severe cases, clinicians should consider prescribing prednisone 1-2 mg/kg or equivalent for one to two weeks. Except in severe cases, ARV therapy should not be interrupted in patients with IRIS (7). In connection with multiple oculomotor nerves damage in young subjects, two other differential diagnoses can be mentioned: multiple sclerosis and Tolosa-Hunt's syndrome. The Tolosa-Hunt's syndrome is characterized by retroorbital pain and in the V1 territory, sometimes associated with an apex syndrome without change of CD4 cell count (8). Multiple Sclerosis is characterized by chronic multiple paralysis, also without change of CD4 cell count (9).

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