The Crisis of IRIS: What Every Nurse Should Know About Immune Reconstitution Inflammatory Syndrome in Patients Infected with HIV ce

Donna W. Roberson, PhD, FNP-BC
Deborah Bowers, MSN, RN, ACRN

OBJECTIVES

After reading the content of the article, you will be able to:

1. Discuss information needed to recognize Immune Reconstitution Inflammatory Syndrome (IRIS)
2. Determine the nurse's role in the management of the patient experiencing IRIS

This continuing education activity is administered by the Association of Nurses in AIDS Care (ANAC) as an Agency providing continuing education credit. The Association of Nurses in AIDS Care is an approved provider of continuing nursing education by the Virginia Nurses Association, an accredited approver by the American Nurses Credentialing Center's Commission on Accreditation. Individuals who complete this program and earn a 70% or higher score on the posttest will be awarded 1.0 contact hours.

Most health care providers are aware that beginning combination antiretroviral therapy (ART) for patients infected with HIV has reduced morbidity of AIDS-related opportunistic infections and subsequently reduced HIV-related mortality. Effective ART leads to significantly reduced viral loads and increased CD4+ T cell counts, especially in the first few months after initiation. ART stimulates immune system reconstitution, thereby reducing the risk of exacerbation or acquisition of an opportunistic infection.

(Journal of the Association of Nurses in AIDS Care, 22, *345-350*) *Copyright © 2011 Association of Nurses in AIDS Care*

Key words: *HIV infection, immune reconstitution inflammatory syndrome (IRIS)*

Although many patients experience improved health benefits from antiretroviral therapy (ART), some experience a paradoxical phenomenon termed immune reconstitution inflammatory syndrome (IRIS). IRIS can manifest in two ways. First, in the presence of a known, treated opportunistic infection (OI), initiation of ART in a previously ART-naive patient may worsen the OI despite improving immune function. Second, IRIS could reveal a previously unrecognized OI that becomes clinically evident as immune function improves (Lawn & Wood, 2010; Murdoch, Venter, Van Rie, & Feldman, 2007; O'Donoghue, Gleaves, & Salvaggio, 2009). These occurrences are usually unexpected. Nurses can be an essential link in the identification of IRIS. Furthermore, nurses can provide individualized care to patients who, without adequate support, may

JOURNAL OF THE ASSOCIATION OF NURSES IN AIDS CARE, Vol. 22, No. 5, September/October 2011, 345-350
doi:10.1016/j.jana.2011.05.009

develop significant physical and psychological distress, which may lead patients in more severe cases to consider stopping ART.

Most reports indicate that IRIS affects about one quarter of HIV-infected patients who begin ART (O'Donoghue et al., 2009). When patients begin ART, it is expected that the immune system function will improve, as evidenced by an increased CD4+ T cell count and a decreased viral load (VL). In the case of IRIS, however, the immune system triggers an inflammatory response that can threaten the health and well-being of the patient, despite the fact that immune system performance is actually improving (O'Donoghue et al., 2009; Page & Andrade, 2008). Most medical researchers believe that this paradoxical immune response is triggered by an antigen to an underlying OI, which may or may not have been identified at the initiation of ART (Page & Andrade, 2008). IRIS symptoms can be experienced as soon as 1 week after beginning ART and as late as 1 year after the initiation of therapy. However, more than 75% of patients who experience IRIS will have symptoms within the first 90 days of initiating ART (O'Donoghue et al., 2009).

Risk Factors for IRIS

The importance of predicting IRIS has led to the identification of host factors associated with an increased risk of developing the syndrome. Importantly, there is an apparent association between CD4+ T cell count and VL. A patient is at increased risk for IRIS when the CD4+ T cell count is less than 200 cells/mm^3 (and even more likely if counts are less than 50 cells/mm^3) and the VL is 100,000 copies/mL or more at the time of ART initiation. The faster the VL decreases, the greater the risk for IRIS (Battegay & Drechsler, 2006; Murdoch et al., 2007).

Donna W. Roberson, PhD, FNP-BC, is an Assistant Professor, East Carolina University, College of Nursing, Greenville, North Carolina. Deborah Bowers, MSN, RN, ACRN, is a Public Health Nursing Supervisor, Alexandria Health Department, Casey Health Center, Virginia Department of Health, Alexandria, Virginia, USA.

Clinical Presentation

Unmasking

The risk for developing IRIS is founded in both pathogen and host factors. It typically affects the patient who is first initiating ART (Lawn & Wood, 2010). The presentation of IRIS typically occurs as an unmasking effect or a paradoxical response to treatment. Both are indicative of an improving immune system with restoration of immune factors (Lawn & Wood, 2010; Murdoch et al., 2007; O'Donoghue et al., 2009; Page & Andrade, 2008). Underlying and previously unknown and untreated OIs cause the unmasking presentation in which the symptoms of the OI increase as immune status improves. Common OIs unmasked by IRIS include *Mycobacterium tuberculosis* (TB), *Mycobacterium avium* complex, cytomegalovirus, *Cryptococcus, Pneumocystis jiroveci* pneumonia, Epstein-Barr virus, hepatitis B virus, hepatitis C virus, and *Candida* species (Kaplan et al., 2009; Page & Andrade, 2008). In some cases, IRIS may exacerbate noninfectious conditions such as rheumatoid arthritis, lupus, or other autoimmune disorders (Kaplan et al., 2009; Murdoch et al., 2007).

Paradoxical Response

The paradoxical response observed in IRIS is a response to therapy that occurs when a patient, appropriately treated for a known OI, experiences worsening symptoms of that OI, but in the presence of an improved immune system (Lawn & Wood, 2010). It is not unusual for symptoms to be severe, which may lead both patient and provider to believe that the patient's immune status is not improving or that it is even worsening. Thus, IRIS becomes a third problem the health care provider must manage in addition to treatment of the OI and management of HIV infection (Brooks, Kaplan, & Masur, 2009).

Clinical Manifestations of IRIS

The clinical presentation of IRIS varies on the basis of the OI that is unmasked, but most patients will exhibit fever, lymphadenopathy, pneumonia with painful productive cough, and dermatological