From Wasting to Obesity, Changes in Nutritional Concerns in HIV/AIDS

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KEYWORDS

• AIDS wasting syndrome • Malnutrition • Lipodystrophy • Frailty • HAART

KEY POINTS

- In the pre–highly active antiretroviral therapy (HAART) era, a wasting syndrome was the predominant nutritional alteration in human immunodeficiency virus/AIDS.
- The early HAART was complicated by the frequent development of a lipodystrophy syndrome related to medications, host factors, and disease characteristics.
- Frailty, associated with sarcopenia, is becoming a common nutritional and clinical problem in the current treatment era.

INTRODUCTION

An adage popular in the early part of the nineteenth century stated, *if you understand syphilis, you understand all of medicine*. In the latter part of nineteenth century the adage evolved to state, *if you understand tuberculosis you understand all of medicine*. In the current era, it can be said that *if you understand human immunodeficiency virus (HIV)/AIDS, you understand all of medicine*. These all are multifaceted diseases affecting multiple organ systems, and the implications span multiple levels within the health care system.

The history of HIV infection in the developed world can be divided into 2 eras, one preceding (1981–1996) and the other following (1996) the availability of highly active antiretroviral therapy (HAART). Much of the developing world remains in the pre-HAART

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era, although the number of treated patients has increased progressively over the past 10 years. In contrast, untreated patients, either through the lack of diagnosis or unwillingness to adhere to treatment, continue to be seen in the developed world, including severely malnourished patients, similar to those seen in the pre-HAART era.

Nutritional consequences in HIV infection have been recognized since early in the epidemic. Protein-calorie malnutrition (wasting) with depletion of lean mass, fat, and micronutrients was the most common problem in the pre-HAART era and led to shortened survival and diminished quality of life.[1] The pathogenesis of wasting is multifactorial and related mainly to altered caloric intake, intestinal injury with nutrient malabsorption, and/or increased metabolic demands from the active infections.[2] Although the specific disease complications are limited to patients with AIDS or other immune deficiency states, the clinical-pathological correlations of malnutrition are the same as in nonimmune deficiency–mediated conditions. Also, as in non-AIDS patients, wasting exacerbates the immune deficits, promotes debility and dependency, and shortens the lifespan.[3] The success of HAART in reconstituting immune function and reducing morbidity ultimately allows HIV-infected individuals in North America to live as long as the general population.[4]

The widespread use of HAART has markedly improved clinical outcomes and decreased the prevalence of wasting. However, many treated patients develop a cluster of other nutritional alterations, including changes in body fat distribution, as well as dyslipidemia and insulin resistance, without wasting of muscle or other lean tissues.[5,6] The lipodystrophy syndrome, as it has come to be called, has attracted considerable clinical and experimental attention.[7,8] The causes are multifactorial, which led to a wide-ranging discussion about cause and effect and the relative roles of host, disease, and treatment in its pathogenesis.

The initial responders to the AIDS epidemic were in a unique situation in that they faced a brand new disease, with no evidence base for evaluation and management to help or hinder them. It soon became clear that the clinical manifestations represented disease complications and that the underlying disease and its causes had to be distinguished from the clinical complications of immune deficiency. For example, there was an initial reluctance by some surgeons to perform major surgery on patients with HIV/AIDS because of reports of poor clinical outcomes, whereas later observations showed that the poor results were related to protein calorie malnutrition and not to HIV/AIDS per se. The perceptions that progressive wasting is a universal phenomenon and that everyone with immune deficiency has intestinal dysfunction were subjected to clinical investigation and were shown not to be true.[9,10] In fact, the approach to nutrition in HIV/AIDS fits the classic clinical conundrum: How is what we are seeing the same as in other diseases, and how is it different?

Initially, there was little to go on other than the classic teachings of medicine. The situation fostered inductive reasoning as well as the performance of clinical trials to develop an evidence base. The response to HIV/AIDS was the first clinical condition in which nonmedical activists came to play an important role in the design and implementation of clinical trials, and they also played a crucial role in promoting acceptance and participation by HIV-infected people worldwide.

In this article, the authors describe the current knowledge on nutrition in the setting of HIV/AIDS, both in the presence and absence of antiretroviral therapy. The authors provide clinical descriptions and discuss pathogenic mechanisms, evaluation, and management of wasting and of lipodystrophy. The authors also briefly discuss the topic of nutritional assessment. The discussion of many topics, such as diabetes mellitus, cardiovascular disease, fat distribution, and so forth, is limited, as they are covered in greater detail elsewhere in this issue.