



Dietotherapy in Health Promotion and Recovery in Seropositive Patients

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Summary

Introduction: Nutritional guidance works as a gradual process of diet adhering, whereby human immunodeficiency virus patients are advised to take responsibility and become aware of the food relationship in the treatment itself. Thus, it is possible to promote a better quality of life for these patients. **Objectives:** Address the need for nutritional care and follow-up of seropositive human immunodeficiency patients. **Methods:** Consists of a literature review, where an electronic research was carried out in the databases: PubMed, SciELO,

LILACS, Capes Journal Portal, as well as printed literature, covering the years between 1995 and 2020.

Results: Nutritional assessment of seropositive patients should be comprehensive and judicious, including the detection of symptoms associated with viral infection and anthropometric and biological parameters. From this, nutritional risks are identified and associated with gastrointestinal, autoimmune and opportunistic pathologies. It is essential that HIV-patients receive nutritional therapy early and continuously, aiming at food reeducation and adequate supply of macros and micronutrients.

Conclusion: Since there is no pre-established definitive nutritional assessment or therapy for HIV-patients, the main purpose of treatment is the recovery of nutritional status as well as its immunological status, thus promoting necessary conditions for body homeostasis and disease remission.

Introduction

The Human Immunodeficiency Virus (HIV) is the causative agent of AIDS (Acquired

Immunodeficiency Syndrome). Its possible origin is African, it was recognized in the USA in the 80's after groups of people were diagnosed with common infections such as Kaposi's Sarcoma, Pneumonia and still had compromised immune system (IS) (GRMEK, 1995).

HIV transmission can occur sexually, by blood, vertically (through the placenta during childbirth or through breastfeeding), occupational, among others, the first being the pathway with the highest rate of transmission. It is important to know that the virus is not transmitted through sex with condom use, hug, kiss on the face, handshake, sneezing, cough, sweat, insect bite, contact with clothing and sharing of cutlery, swimming pool, bathroom, among others (BRASIL, 2002).

HIV is a retrovirus, which to replicate binds to a host glycoprotein, releases the "core" in the cytoplasm of the host cell, the reverse transcriptase enzyme transcribes viral RNA into DNA that goes to the nucleus of the cell where it can be integrated into the host genome (provirus). After the

provirus is reactivated, it produces messenger RNA that will take on the viral protein that will trigger in the synthesis of new viral genomes (virion) that may or may not infect other cells (BRASIL, 2006).

CD4+ T lymphocytes, produced in the Timo, play a very important role in IS and are the main ones infected by HIV, with this there is exhaustion of these cells and consequently the immune function is compromised. Thus, HIV carriers often die due to opportunistic diseases that take advantage of the weaknesses of the carrier's body, such as meningitis, lymphoma, HIV-associated nephropathy, Kaposi's sarcoma, pneumonia, among others (RUBIN, 2006).

It is known that the nutritional risk in patients affected by HIV is a fundamental factor in the clinical prognosis, concluding that the risk increases the period of hospitalization, resulting in an increase in the mortality of these patients (PERRUT *et al.*, 2014). When the organism is infected with HIV, the immune system goes into body defense against infection, generating increased nutritional and

energy needs, also caused by the presence of opportunistic diseases (due to infection and fever) (ESCOTT-STUMP, 2011).

Healthy and adequate eating, within the biological needs of each individual, helps in the increase of CD4+ T lymphocytes, improves intestinal absorption, reduces symptoms of diarrhea, loss of muscle tissue and others symptoms that can be minimized or stopped through adequate nutrition. Nutritional guidance works as a gradual process of diet adhering, whereby HIV-patients are advised to take responsibility and become aware of the food relationship in their own treatment. Thus, a better quality of life can be promoted to these patients (BRASIL, 2006).

The number of cases in Brazil until June 2018 reached a mark of 926.742 identified and confirmed; reaching an annual average of 35.000 new cases in that same year. The distribution of case incidences in the country was as follows: Southeast region registering 5.656 cases (region with the highest number of cases), followed by the Northeast region

with 3.732, South with 2.882, North with 2.022 and Central-west with 1.179. Although the numbers and statistics are worrisome, there are data regarding the new cases, that the rates of detection of the disease gradually fall in the country in recent years (Brasil, 2018).

Methodology

This study consists of a literature review, and an electronic research was carried out in the databases: PubMed, SciELO, LILACS, Capes Journal Portal, as well as printed literature, covering the years 1995 to 2020, using the terms of reference: “Dietoterapia no HIV (Hiv dietotherapy)”, “Imunodeficiência humana (Human immunodeficiency)”, “Terapia nutricional em soropositivos (Nutritional therapy in seropositive people)”.

Pharmacological Interventions: Drugs and Effects

The drugs used in the treatment were designed to prevent the multiplication of the virus, and are usually offered by a combina-

tion of two drugs or more, being known as Antiretroviral Therapy (ART). However, this treatment, in addition to the benefits, can bring some adverse effects, one of which is to the nutritional status of the patient, which can go through the process of malnutrition, caused by lack of appetite, as well as nausea, or even complications in the absorption of macro and micronutrients (ALMEIDA *et al.*, 2017).

After the beginning of ART use, some studies report weight loss between the initial 3-6 months. Increasing by 5% the chances of mortality of these patients. Given this worrying situation, some other drugs were studied and introduced by nutrologists to mitigate the effects, and stabilize the nutritional condition of the patient, through an induction of appetite. Medications such as megestrol acetate, and the active ingredient in marijuana (dronabinol) are some cited in studies (SANTOS, 2020).

Nutritional Assessment

Nutritional assessment of HIV-patients should be carried out comprehensively and judiciously, as the factors include symptoms associated with virus infection, requiring an evaluation of anthropometric and biological indices (PAULA *et al.*, 2010). It allows possible nutritional risks to be identified, assesses the autoimmune system, gastrointestinal changes and opportunistic pathologies. The importance of this stage to be performed immediately and multiprofessionally aims to intervene possible changes and aggravating the immunological and nutritional status of the individual (PINTO *et al.*, 2016; RODRIGUES *et al.*, 2013; CUPPARI, 2019).

Compartmental anthropometric measurements allow the identification of abnormal depletion or distribution of fat, although the most appropriate and reliable method to be used in the evaluation of an HIV-positive patient has not yet been well established (SANTO *et al.*, 2016; SANTOS, 2020). However, a nutritional assessment should combine objective and sub-

jective methods, including clinical history, physical examination, anthropometry, bioimpedance, laboratory tests, among other methods necessary to evaluate body composition and signs of nutritional deficiency, including food intake. Attention should also be paid to the warning signs: rapid weight loss, gastrointestinal problems, inadequate intake and interaction between drug and nutrients, as well as their possible causes and consequences (CUPPARI, 2019; SANTOS, 2020).

In addition to these methods, bioimpedance assessment relates lean mass, lipid mass and total body water volume (PAULA *et al.*, 2010), highlighting a possible muscle catabolism, determining nutritional status and the need for therapy (SENA *et al.*, 2014). However, it should be noted that bioimpedance should be used in the presence of lipodystrophy syndrome (SANTOS, 2020). There is also the CD4+ complement counting method, which evaluates the plasma protein compound in the immune response. It also evaluates the use of drugs in ART, which has a great impact on the nutritio-

nal status of individuals (SENA *et al.*, 2014).

Nutritional Therapy

The nutritional management necessary for the patient aims to protect gastric, hepatic, pancreatic, renal, intestinal functions, reduce the effects that interfere with drug and food interactions, contributing to the intake of a balanced diet with probable addition of micronutrient supplementation to regulate nutritional status and maintain body weight (REIS, 2004).

According to Rodrigues *et al.* (2013), the consumption of fruits, vegetables and regulatory foods, was considerably low according to the recommended intake of the Food Guide for the Brazilian Population. The study recommends the adequate consumption of this group of foods for HIV patients, because they are food sources of vitamins, minerals and fibers, and should be present daily in meals, contributing to health and reducing the risks of diseases.

It is recommended that all individuals with HIV and AIDS

receive nutritional therapy early and continuously, as it aims to re-education patients about the importance and relationship of adequate nutrition in macros and micronutrients, providing maintenance or improvement of nutritional status and prevention of vitamin and mineral deficiencies (MAHAN & ESCOTT-STUMP, 2012).

With few modifications, the recommendations to these patients depend mainly on the global state presented. According to some authors, the Harris-Benedict equation can be used, alone, to estimate basal energy expenditure (COLIMBRI, 2001; MAHAN & ESCOTT-STUMP, 2012); adding this, energy percentages depending on whether the patient is asymptomatic, 10%, or symptomatic, 20% to 30%, for proper energy maintenance and better supply of calories by malabsorption (WHO, 2003; WORLD BANK, 2008; MANN, 2011).

It can also be considered 30 to 35 kcal/kg of current weight/day for asymptomatic patients (stage A); 35 to 40 kcal/kg of current weight/day for the sympto-

matic and in need of weight gain (stage B); 40 to 50 kcal/kg of current weight/day for patients with opportunistic infection and CD4 < 200 (stage C); consider 20 kcal/kg of current weight/day in stage C patients with severe malnutrition and refeeding syndrome; and 20 to 25 kcal/kg of adjusted weight/day in the presence of obesity (CUPPARI, 2019).

Usually, carbohydrates are included in percentages common to the healthy population, between 45 and 65% of the total energy value (TEV), consisting predominantly of complex carbohydrates and lower glycemic load, and there should be restrictions depending on the conditions of insulin resistance or associated diabetes. The fibers are commonly adjusted at 25 to 30 g/day, being modulated to the type of fiber by the presence of diarrhea and constipation (CUPPARI, 2019).

For proteins, general recommendations are based on 1.1 to 1.5 g/kg of current weight/day for asymptomatic patients (stage A); 1.5 to 2.0 g/kg of current weight/day for symptomatic and with complications of weight gain

(stage B); 2.0 to 2.5 g/kg of current weight/day in the presence of opportunistic infections and CD4 < 200 (stage C); considering the gradual increase in supply for stage C patients with severe malnutrition and refeeding syndrome; and adjust for adjusted weight in cases with obesity (CUPPARI, 2019). The prescription can reach up to 3.0 g/kg of current weight/day for patients in very high stress (COLIMBRI, 2001). In percentages of macronutrients, it may also be suggested 12% to 15% of TEV (WHO, 2003; WORLD BANK, 2008).

There are no recommendations for caloric increase through lipids. In addition, some patients with malabsorption and steatorrhea may benefit from hypolipidic diets and medium-chain triglyceride (MCT) supply (MANN, 2011; MAHAN & ESCOTT-STUMP 2012; COLIMBRI, 2001). Therefore, normally lipid percentages are offered in 30% to 35% of VET (PAULA *et al.*, 2010; WORLD BANK, 2008; COLIMBRI, 2001).

Regarding water intake, 30 to 35 ml/kg/day is recommended, with the need for additional

amounts to compensate for constant losses, including electrolytes, in possible cases of diarrhea, nausea and vomiting, severe sweating and prolonged fever (ESCOTT-STUMP, 2011).

Dietary supplementation is an interesting proposal for the recovery of adequate dietary intake in patients with recent weight loss. According to Evans *et al.* (2013), supplementation presents relevant results in body weight gain, correcting changes in body composition and immune function in patients with weight loss at the beginning of ART. In this study, supplementation acted against malnutrition, in addition to reducing inflammation or severity of anemia by increasing the count of red blood cells and hemoglobin and improving physical activity, increasing quality of life.

According to Olsen *et al.* (2014), during 3 months of supplementation formulated, adherent patients obtained considerable total weight increases of 2.05 kg and 2.06 kg, being 0.85 kg and 0.97 kg of lean mass, on average, respectively. Different from patients with ART without supplementary

support, who gained, on average, 0.87 kg of weight without significant muscle gain. In addition, one of the supplements used in the study also implied the improvement of immune recovery.

The impairment of nutritional status in individuals who have acquired HIV causes a change in the immune response, facilitating the onset of infectious diseases, which compromise even more. Recent research includes the use of immunopharmacological substances such as glutamine, arginine, selenium, omega 3 and others, within the treatment of AIDS, as adjuncts in improving symptoms, considering the synergistic between nutrition and the immune system aiding against the progression of the disease. Glutamine supplementation by these patients has been shown to be beneficial in stress states, as it preserves the stocks produced by the body, maintains intestinal health, nourishing cells with high metabolic turnover, improves nitrogen balance in surgical trauma and reduces bacterial translocation (LEONES *et al.*, 2011).

Arruda & Pereira (2013), in

a study on the use of omega 3 in dyslipidemic seropositive individuals using ARV, affirm the protective and immunomodulatory effect of omega 3 fatty acid, and effect on the reduction of triglycerides and improvement of the immune profile. In another analysis, Capili & Anastasi (2013) found an average reduction of 112mg/dL in triglyceride levels through supplementation of 4g of omega 3 (EPA/DHA – 2.400mg / 1.600mg/day) during 10 weeks, concluding that their supplementation associated with the diet should be considered to manage triglyceride levels. Metkus *et al.* (2013) adds that omega 3 supplementation in addition to significantly altering triglycerides in the study served as a treatment strategy to reduce systemic inflammation in stable HIV-positive patients by reporting il-6 and TNF- α reductions.

Enteral Nutritional Therapy (ENT) is considered on the same conditions of indication of the access route and is an effective measure for severely malnourished patients. It is used if ingestion or absorption is compromised by gastrointestinal changes such as

diarrhea. Therefore, it is necessary to aid formulas containing peptides, MCT and immunomodulators to improve immune response and reduce cell mass loss. As for parenteral nutritional therapy (PNT), it is indicated when the oral or enteral route is not tolerated in sufficient amounts in relation to optimal nutrition, such as chronic diarrhea and incoercible vomiting. Among some advantages of total PNT, there is the promotion and the intestinal mucosa rest, and thus reduces inflammation, the antigenic stimulation, and directly offers amino acids for mucosa recovery. However, enteral nutritional support is preferable, since it maintains trophism and intestinal functioning, avoiding mucosal atrophy (CUPPARI, 2019).

Final Remarks

Antiretroviral treatment combined with nutritional therapy can significantly favor the clinical picture of the health status of people living with HIV/AIDS, decreasing the mortality rate. Although nutritional deficiencies are not considered as the main cause

of immune disorder in AIDS, research indicates that several nutrients act as important cofactors, influencing the immune system and the survival of the aidetics patients.

As there is no pre-established definitive nutritional assessment or therapy for HIV-patients, the main purpose of treatment is the recovery of nutritional status as well as the immunological status of the same, thus promoting necessary conditions for body homeostasis and remission of the disease.

Therefore, it is necessary to know the signs and symptoms caused by viruses, as it is fundamental in the decision of dietotherapy. Well-fed patients have higher resistance to infections, less symptomatology and complications of the disease.

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