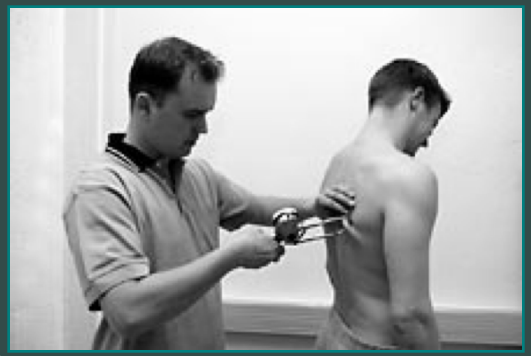
AIDS e Nutrição

jacque@fmrp.usp.br

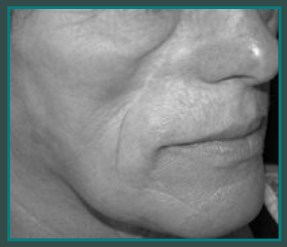
Nutrição e AIDS

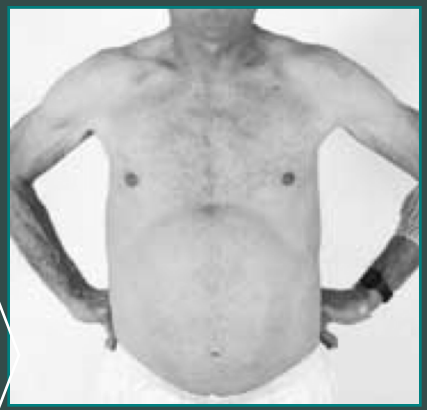
Transição epidemiológica

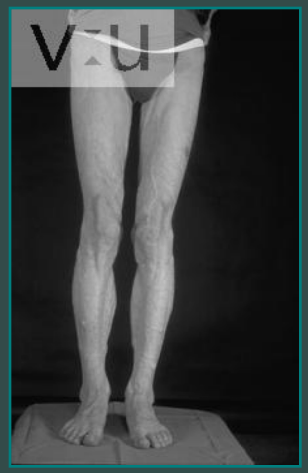
Caquexia



Eutrofia







Lipodistrofia

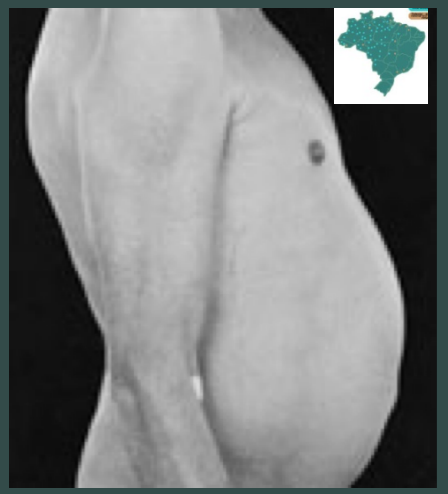
Estado nutricional de pacientes com AIDS

Caquexia

↓ Massa corporal magra

↓ Massa corporal gorda

Antiretroviral



Síndrome da Lipodistrofia

Dislipidemia

Hiperglicemia

↑ gordura abdominal

Etiologia da subnutrição na AIDS

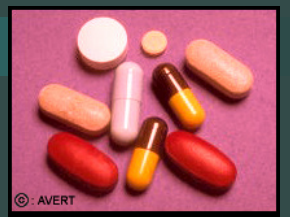
- Anorexia
- Infecções oportunistas
- Alterações metabólicas
- Má-absorção
- Medicamentos
- Diarréia

Lipodistrofia e SIDA

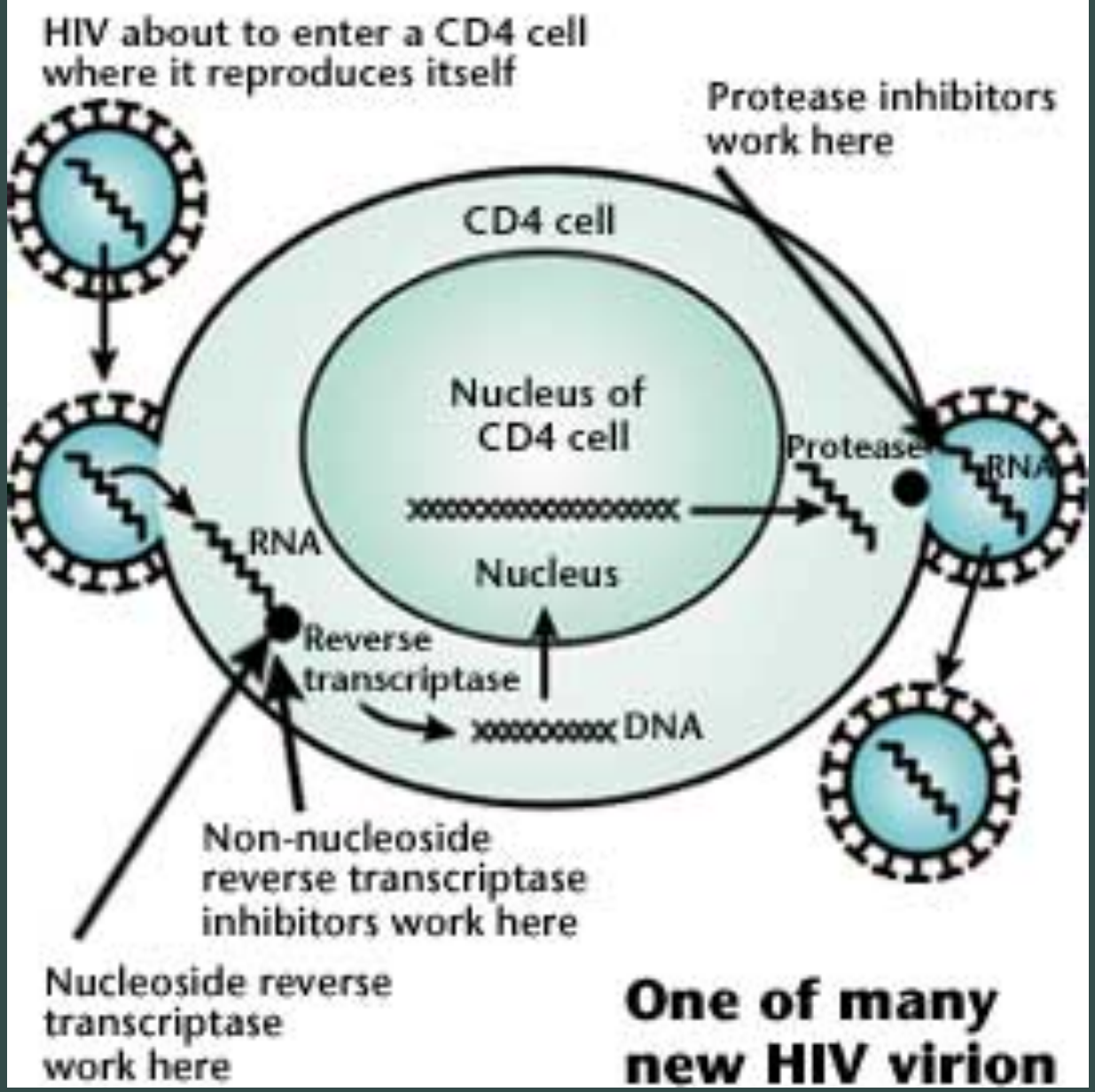
Inibidores de protease

- Inibe protease do vírus da imunodeficiência humana (maturação do vírus)
- Indinavir, nelfinavir, ritonavir, saquinavir

Antiretroviral Agents for HIV



A selection of HIV / AIDS Antiretroviral drugs



Terapia antiretroviral (HAART) ↓ mortalidade e morbidade de pacientes HIV-positivos; ↑ peso e qualidade de vida

Terapia antiretroviral e alterações metabólicas (hiperglicemia, hiperlipemia e lipodistrofia)

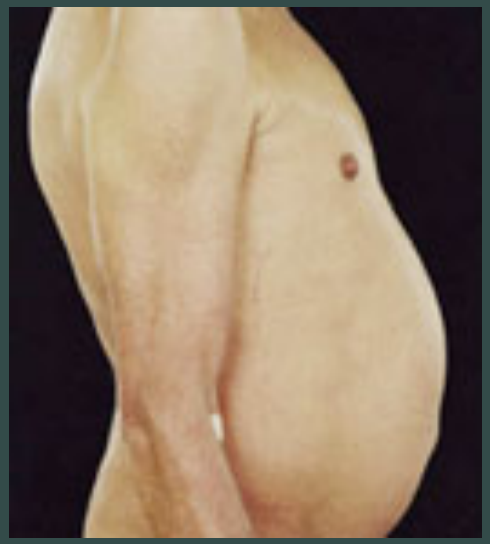
Shevitz A et al., AIDS 2001

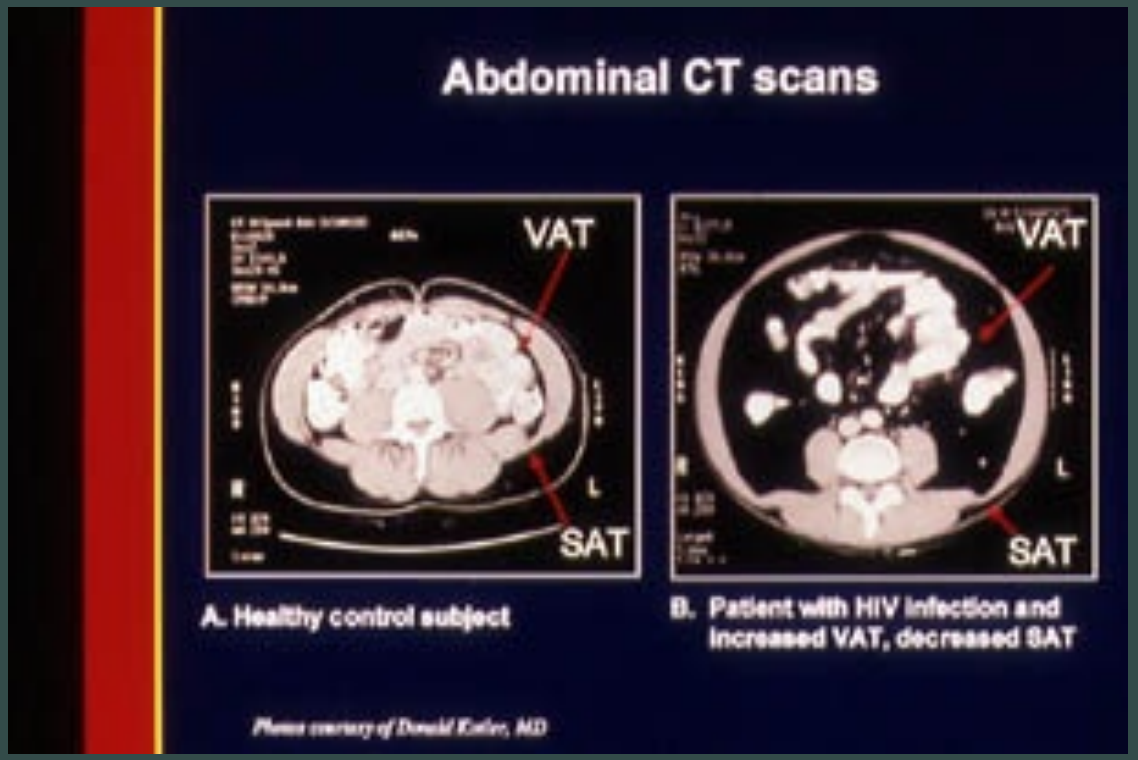
HIV e metabolismo lipídico

Inibidor de protease e inibidor de transcriptase reversa

- **↑ Triglicéride e colesterol**
- **Estavudina e dideoxinosina; Ritonavir ↔ ↑ Triglicéride (> 1000mg/dl)**
- **Ritonavir → dislipidemia em duas semanas - ↑ colesterol em 24% e triglicéride em 137%**
- **↑ LDL (27% de aumento) e ↓ HDL**
- **Prevalência de dislipidemia (HAART) – 47 – 57%**

Síndrome da Lipodistrofia

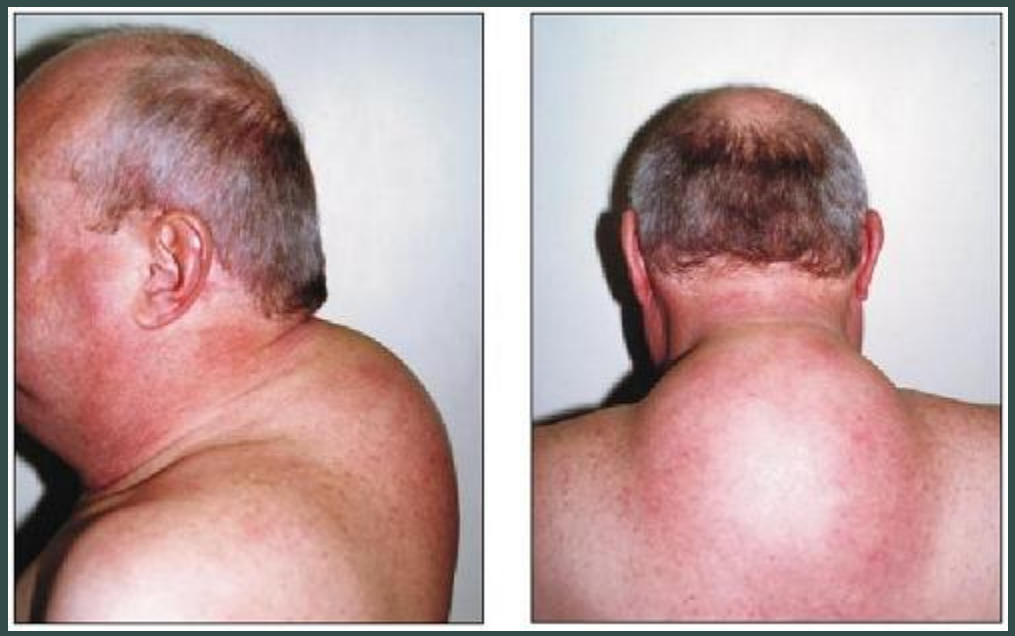


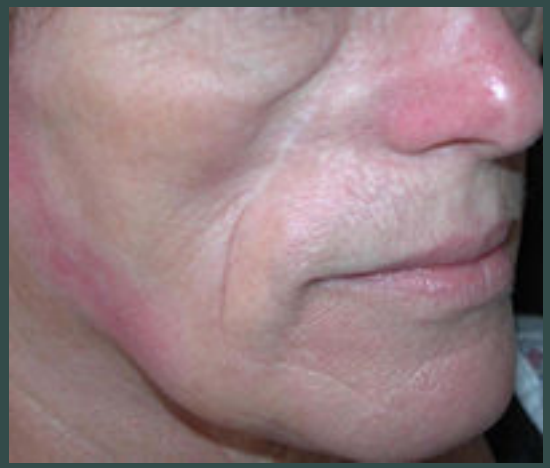


- ↑ gordura visceral (adipogênese e lipogênese)
- ↑ circunferência abdominal e gordura dorsocervical

Shevitz A et al., AIDS 2001

Síndrome da Lipodistrofia

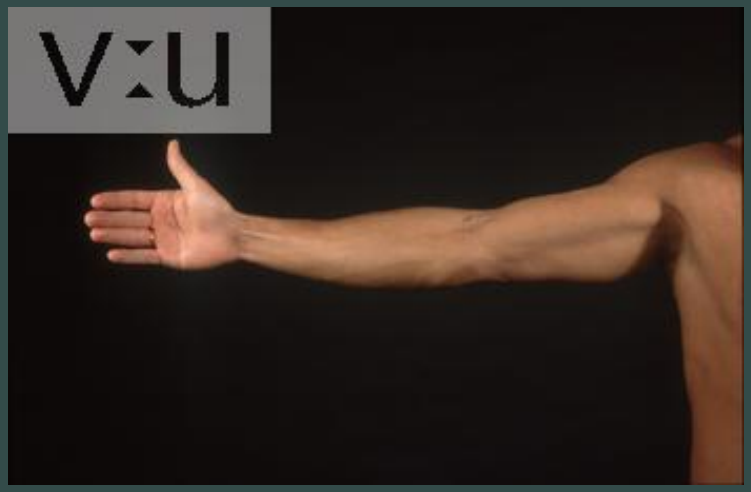




- ↑ circunferência abdominal e gordura dorsocervical
- Lipoatrofia de face, braços, pernas, nádegas (atrofia celular, apoptose)

Shevitz A et al., AIDS 2001

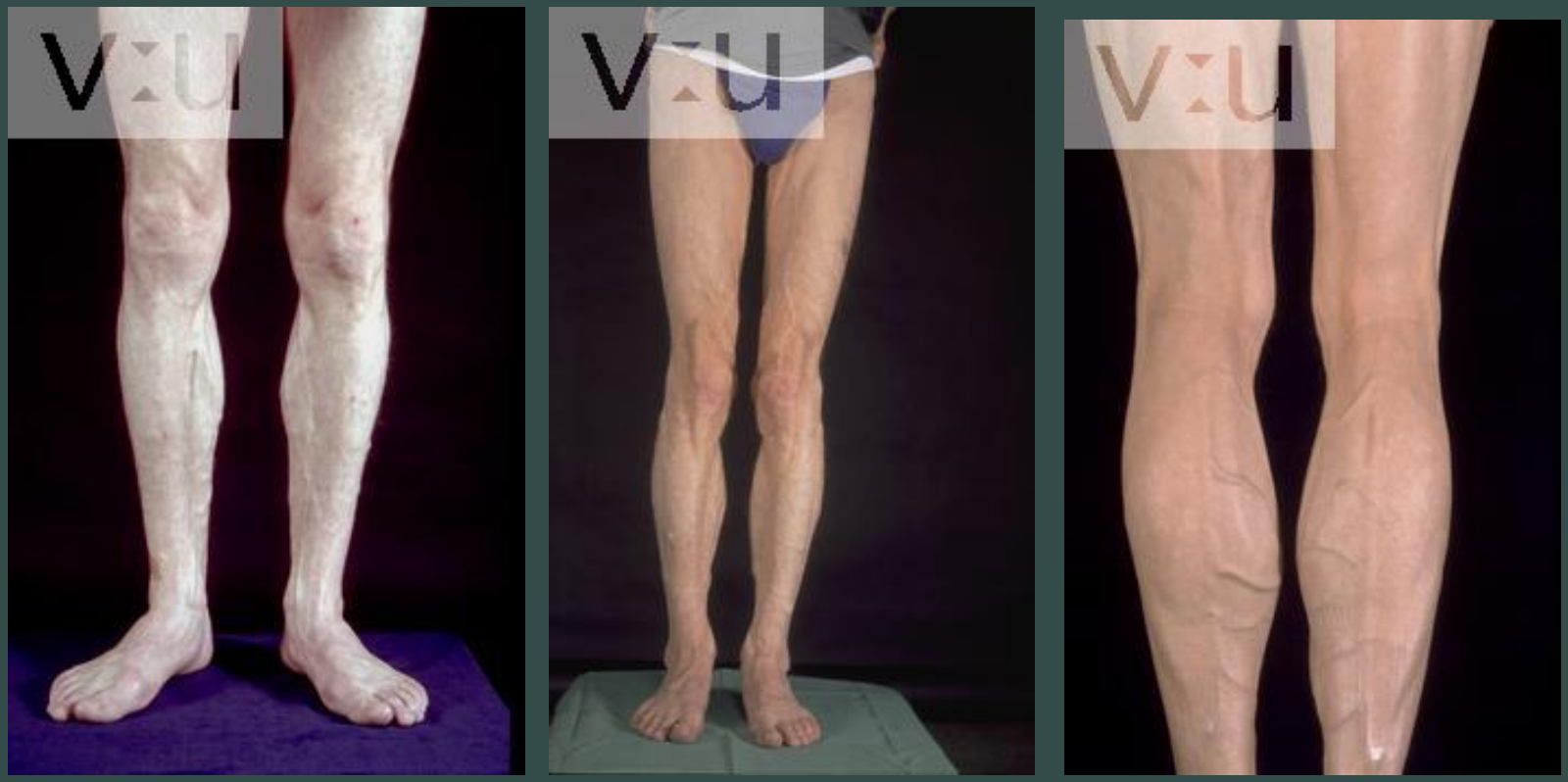
Síndrome da Lipodistrofia



- Lipoatrofia de face, braços, pernas, nádegas (atrofia celular, apoptose)

Shevitz A et al., AIDS 2001

Síndrome da Lipodistrofia



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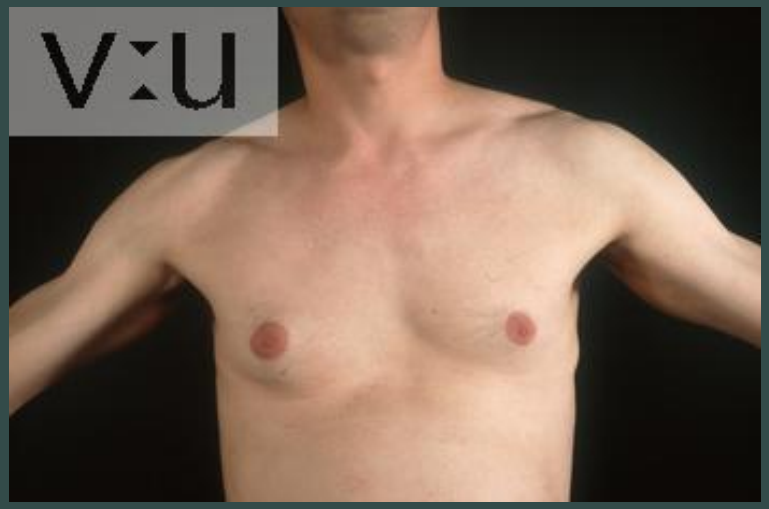
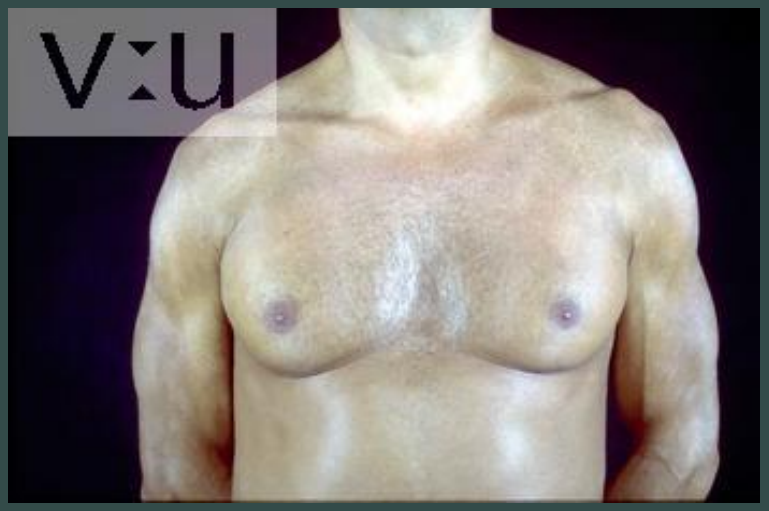
Shevitz A et al., AIDS 2001

Síndrome da Lipodistrofia





↑ mama

Shevitz A et al., AIDS 2001

HIV e metabolismo lipídico em pediatria

Lipodistrofia

- É evidente?
- Alteração na dieta oral tem algum impacto no estado nutricional?

Revista da Sociedade Brasileira de Medicina Tropical --(-):, ------, XXXX

Article/Artigo

Nutritional assessment and lipid profile in HIV-infected children and adolescents treated with highly active antiretroviral therapy

Avaliação nutricional e do perfil lipídico em crianças e adolescentes infectadas pelo HIV tratadas com terapia antirretroviral de alta potência

Marina Hjertquist Tremeschin[1], Daniela Saes Sartorelli[2], Maria Célia Cervi[1], Bento Vidal de Moura Negrini[1], Roberta Garcia Salomão[1] and Jacqueline Pontes Monteiro[1]

TABLE 1 - Clinical and demographic data of children and adolescents distributed according to type and time of antiretroviral therapy (ART) in the beginning of the study and after twelve months follow-up.

Parameters	Group 1(n = 17)		Group 2(n = 9)		Group 3(n = 9)		Group 4(n = 16)		p-value	
	A	B	A	B	A	B	A	B	A	B
Age (months)	116 (82-180)	130 (92-192)	140 (73-187)	151 (86-202)	126 (60-195)	136 (74-208)	120.5 (48-192)	135 (60-204)	0.599	0.634
Viral load (cells/mm^3)	2,878 (49-2466)	2,399.5 (49-48,477)	556 (49-38,929)	49 (49-144,362)	12,775 (232-10,999)	3,904 (49-91,438)	-	-	0.210	0.290
CD4/CD8 (cells/mm^3)	0.425 (0.19-1.18)	0.53 (0.11-1.06)	0.72 (0.15-1.02)	0.63 (0.17-1.08)	0.33 (0.04-0.41)	0.37 (0.08-1.11)	-	-	0.019‡	0.217
CD4 (cells/mm^3)	574.5 (17-816)	730 (230-1,089)	681 (112-1,032)	821 (68-1,083)	396 (13-654)	406 (103-1,584)	-	-	0.047‡	0.530
CD8 (cells/mm^3)	1,466 (352-2,497)	1,262 (576-2,905)	936 (349-4,249)	1,316 (1,004-3,000)	1,182 (345-3,035)	1,105 (637-3,503)	-	-	0.314	0.782
Time of ATR (months)	102 (12-143)	115 (24-156)	86 (70-156)	100 (83-171)	84 (0.13-168)	93 (9-181)	-	-	0.613	0.575
Time of PI (months)	-	-	27 (5-86)	39 (20-100)	1 (0.13-2)	11 (9-14)	-	-	0.000‡	0.000*
Total cholesterol (mg/dl)	125 (100-202)	131 (91-209)	161 (129-236)	165 (110-215)	166 (103-213)	156.5 (107-202)	148.5 (101-200)	154 (95-203)	0.059	0.169
Triglycerides (mg/dl)	94 (40-197)	79 (55-286)	114 (43-336)	96 (42-216)	136 (63-271)	140 (73-273)	54.5 (20-162)	67.5 (33-117)	0.003**	0.004***
HDL cholesterol (mg/dl)	39 (21-59)	36 (27-58)	32 (26-47)	44 (19-54)	34 (21-52)	36 (23-43)	42 (32-68)	49.5 (34-69)	0.518	0.004****
LDL cholesterol (mg/dl)	69 (57-146)	74.5 (42-127)	74 (55-96)	100 (54-140)	109 (60-133)	100 (55-124)	85 (48-137)	83 (31-148)	0.302	0.219
AUQEI (counts)	58 (46-68)	56 (45-71)	56 (39-62)	54 (45-73)	54 (43-62)	57 (47-66)	53.5 (40-66)	54 (44-65)	0.280	0.564

Column A: dates at the onset of the study, column B: dates after twelve months follow-up, CD4: Lymphocyte T CD4 count, CD8: lymphocyte T CD8 count, serum HDL: high density lipoprotein, serum LDL: low density lipoprotein, AUQEI: Quality of life questionnaire, ‡ group 2 bigger than 3, *group 2 different from group 3, **group 4 different from groups 2 and 3,***group 3 different from group 4, ****group 4 different from groups 1 and 3.

ATR: antiretroviral therapy; PI: protease inhibitor.

participate. The participants were divided into 4 groups of patients on the basis of the type of HAART being used: group 1, patients using nucleoside reverse transcriptase inhibitors or non-nucleoside reverse transcriptase inhibitors; group 2, patients using protease inhibitor (PI) for more than two months; group 3, patients using protease inhibitor for up to two months; and group 4, paired HIV-negative healthy children and adolescents.

Energy and macronutrient intakes were similar between the groups at all time points during the study, but a higher lipid intake (% of energy intake) occurred compared to the recommended intake in all groups. The mean energy intake at the onset of the study and at the end of study was, respectively, 2,413kcal (1,586 - 5,806) and 2,148kcal (1,289 - 4,166). The mean percentage of lipid calories at the onset and end of the study was, respectively, 37.8% (28.6 - 49.2) and 38.5% (28 - 48.6). Age and weight did not interfere with the energy intake results, according to ANCOVA analyses (at the onset: age $p = 0.39$, weight $p = 0.72$; at the end: age $p = 0.94$, weight $p = 0.49$).

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Clinics 13-cln-OA-0622 25/5/11 21:13:36

CLINICS 2011;000(000):000-000 DOI:10.1590/S1807-59322011000600013

CLINICAL SCIENCE

Nutritional status and lipid profile of HIV-positive children and adolescents using antiretroviral therapy

Patricia Viganó Contri,[I] Érica Miranda Berchielli,[I] Marina Hjertquist Tremeschin,[I] Bento Vidal de Moura Negrini,[I] Roberta Garcia Salomão,[I] Jacqueline Pontes Monteiro[II]

[I] Nutrition and Metabolism, Medical School of Ribeirão Preto, University of São Paulo Department of Pediatrics, Ribeirão Preto, São Paulo/Brazil. [II] Clínica Médica, Medical School of Ribeirão Preto, University of São Paulo, Ribeirão Preto, SP/Brazil.

Table 5 - Lipid profile of HIV-positive children and adolescents using and not using PI: analysis between groups and longitudinal analysis.

Lipid profile	G1 (PI)		G2 (No PI)	
	M1	M2	M1	M2
Triglycerides* (mg/dl)	153 (30–344)	138 (58–378)	76 (29–378)	76 (29–378)
Cholesterol (mg/dl)	161 (87–230)	161 (87–225)	142 (98–210)	142 (91–210)
HDL-cholesterol (mg/dl)	37 (14–76)	40 (14–52)	39 (30–59)	40 (30–52)
Non-HDL-cholesterol* (mg/dl)	122 (98–170)	119 (63–170)	93 (61–125)	89 (58–161)
LDL-cholesterol (mg/dl)	91 (40–123)	104† (40–142)	82 (47–121)	82 (42–145)

G1: group using PI; G2: group not using PI.
M1: initial moment; M2: final moment.
HDL: high density lipoprotein; LDL: low density lipoprotein.
*Values were statistically different between groups of children and adolescents using and not using PI at both M1 and M2: $p < 0.05$.
†Values were statistically different between groups of children and adolescents using and not using PI only at M2: $p < 0.05$.

BRAZ J INFECT DIS. 2014;18(4):394–399

Prevalence of lipodystrophy and risk factors for dyslipidemia in HIV-infected children in Brazil

Luanda Papi[a], *Ana Carolina G.B. Menezes*[b], *Hélio Rocha*[c], *Thalita F. Abreu*[c], *Ricardo Hugo de Oliveira*[c], *Ana Cristina C. Frota*[c], *Lucia de A. Evangelista*[c], *Cristina B. Hofer*[a,*]

A B S T R A C T

The aim of present study was to describe the frequency of lipodystrophy syndrome associated with HIV (LSHIV) and factors associated with dyslipidemia in Brazilian HIV infected children.

HIV infected children on antiretroviral treatment were evaluated (nutritional assessment, physical examination, and laboratory tests) in this cross-sectional study. Univariate analysis was performed using Mann–Whitney test or Fisher's exact test followed by logistic regression analysis. Presence of dyslipidemia (fasting cholesterol >200 mg/dl or triglycerides >130 mg/dl) was the dependent variable.

90 children were enrolled. The mean age was 10.6 years (3–16 years), and 52 (58%) were female. LSHIV was detected in 46 children (51%). Factors independently associated with dyslipidemia were: low intake of vegetables/fruits (OR = 3.47, 95%CI = 1.04–11.55), current use of lopinavir/ritonavir (OR = 2.91, 95%CI = 1.11–7.67). In conclusion, LSHIV was frequently observed; inadequate dietary intake of sugars and fats, as well as current use of lopinavir/ritonavir was associated with dyslipidemia.

Lipodystrophy syndrome among HIV infected children on highly active antiretroviral therapy in northern India

* Euden Bhutia[1], Alok Hemal[1], Tribhuvan Pal Yadav[1], K.L Ramesh[2]

Abstract:

Background: It is estimated that about 2.5 million people are living with HIV infection in India. Although antiretroviral drugs have been able to reduce the mortality, these drugs have serious side effects one of which is lipodystrophy syndrome. Most of the drugs used in HAART viz, protease inhibitors, stavudine and nevirapine are associated with lipodystrophy. Hence we conducted this study to assess the prevalence of lipodystrophy in HIV infected children on HAART and its associated risk factors.

Materials and methods: A cross sectional study was conducted on 80 HIV infected children aged 2-18 years of age who were on stavudine based HAART for ≥2 years. These children were assessed for presence of lipodystrophy, its metabolic complications and associated risk factors.

Results: Lipodystrophy was observed in 33.7% of children with lipoatrophy being the commonest subtype followed by lipohypertrophy. Older age, increased duration of treatment and dyslipidaemia were found to be associated in patients with lipodystrophy than those without. On further multivariate analysis of independent risk factors only increased duration of treatment was significantly associated with lipodystrophy. No association was found with insulin resistance.

Conclusion: We observed that lipodystrophy is a common finding in HIV patients treated with HAART for long duration.

African Health sciences Vol 14 No. 2 June 2014

Journal of Pediatric Gastroenterology and Nutrition
44:629–633 © 2007 by European Society for Pediatric Gastroenterology, Hepatology, and Nutrition and
North American Society for Pediatric Gastroenterology, Hepatology, and Nutrition

Niacin Nutritional Status in HIV Type 1–Positive Children: Preliminary Data

*Marina Hjertquist Tremeschin, *Maria Célia Cervi, *José Simon Camelo Júnior,
*Bento Vidal de Moura Negrini, *Francisco Eulógio Martinez, *Fabrízio Motta,
*Mônica Silva de Souza Meirelles,
*Helio Vanucchhi, and †Jacqueline Pontes Monteiro

*Medical School of Ribeirão Preto, and †Department of Nutrition and Metabolism,
Medical School of Ribeirão Preto, University of São Paulo, São Paulo, Brazil

Nutritional status and the 24-hour urine excretion of N1MN.

HIV-positive children and HIV-negative children who were or were not born of mothers with HIV-1 infection.

TABLE 1. *Anthropometric measures and body composition by bioelectrical impedance technique of HIV-positive children (group 1), HIV-negative children born to HIV-positive mothers (group 2), and control children (group 3)*

Parameters*	Group 1 (n = 20)	Group 2 (n = 10)	Group 3 (n = 10)
Weight adequacy, %	100 (77–198)	102 (83–123.5)	98 (83–120)
Height adequacy, %	98.4 ± 5.5	99.6 ± 3.7	99.6 ± 5.2
Weight/height, kg/cm %	104 (59–167)	97 (84.1–117)	99.6 (88.6–116)
Triceps skinfold thickness (% of adequacy)	90.4 ± 44.2	91.1 ± 32	81.9 ± 40.3
Subscapular skinfold thickness, mm	8.3 ± 7.9	6.8 ± 1.76	7.35 ± 5.5
Midarm circumference, cm	16 ± 2.8	17.6 ± 3.3	14.9 ± 5.5
Lean body mass, %	71.3 ± 8.7	76.2 ± 6.2	74.1 ± 8.0
Fat mass, %	28.9 ± 8.7	23.8 ± 6.2	25.9 ± 8.0
Total body water, %	52.6 ± 11	58.5 ± 4.7	56.9 ± 6.0
Extracellular water, %	34.1 ± 5.5	35.2 ± 3.5	33.9 ± 4.2
Intracellular water, %	38.7 ± 7.7	40.9 ± 8.7	39.4 ± 9.0
Body cell mass, %	55.5 ± 11.2	58.5 ± 12.3	57.5 ± 13.3

*$P > 0.05$.

Age

Gender

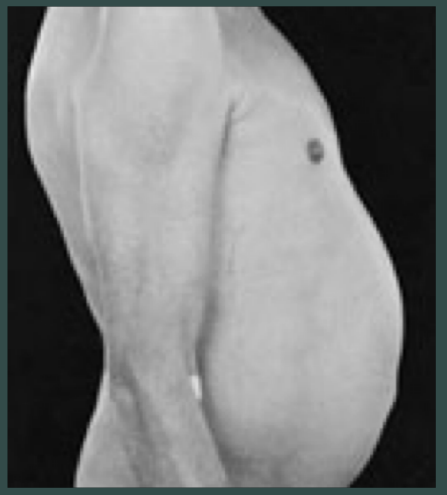
Percentage of malnutrition

Anthropometry

Body composition

Estado nutricional de pacientes com AIDS: Como mensurar?

- História médica e exame físico
- Antropometria: alteração de peso; IMC; medida das dobras cutâneas; BIA; Circunferências
- Avaliação da atividade física
- Avaliação bioquímica
- Terapia medicamentosa
- História alimentar
- Avaliação psico-social



ADA REPORTS

J Am Diet Assoc. 2004;104: 1425-1441.

Conduta Nutricional

Perfil da ingestão alimentar – ADIS – FMRP - USP

Grupo	Encontrado	Padrão
Cereais/massas	3x/dia	Consumo moderado
Legume/verdura	< 2x/semana	1 – 3x/dia
Leite	1x/semana	1 – 2x/dia
Fritura	1x/dia	Moderado
Doces	1x/semana	Moderado
Frutas	< 2x/semana	2 – 3 porções

Adequação de energia e nutrientes

- ✓ Alimentos naturais facilmente encontrados
- ✓ Suplementação oral de micronutrientes
- ✓ Lipídios: ajustar conforme tolerância
- ✓ Nutrição enteral e/ou parenteral
- ✓ Hiperalimentação
- ✓ Individualizar

Nemechek PM et al.
Mayo Clin Proc. 2000

Adequação de energia e nutrientes

A curto prazo, o aconselhamento nutricional, com ou sem suplementação oral pode aumentar a ingestão energética em pacientes HIV^+ subnutridos

Rabeneck L et al. ‚JADA 1998

Adequação da ingestão de nutrientes

- ✓ Qual a real necessidade de nutrientes?
- ✓ 100-45kcal/kg/dia? 1,5 - 2,5g ptn/kg//dia?
- ✓ Necessidades nutricionais ↑ ?
- ✓ RDI: referência; adequação: ≥ 67% RDI ou > 100%

Dannhauser A et al. Eur J Clin Nutr 1999

Nutrition and HIV/AIDS in infants and children in South Africa: implications for food-based dietary guidelines

Michael K. Hendricks*, Brian Eley† and Lesley T. Bourne‡

- ✓ Crianças HIV-infectadas e assintomáticas (> 10% consumo energético para manter crescimento). WHO 2003.
- ✓ Crianças HIV-infectadas sintomáticas (50-100% acima da recomendação para catch-up).WHO 2003.
- ✓ Proteína: não tem estudos; manter 5-20% (2 a 3 anos), 10 a 30% (4 a 10 anos) valor energético total.
- ✓ Micronutrientes que reduzem morbi-mortalidade: Vitamina A e zinco. Bobat et al 2005; Coutsoudis et al 1995.

Nutrition and HIV/AIDS in infants and children in South Africa: implications for food-based dietary guidelines

Michael K. Hendricks*, Brian Eley† and Lesley T. Bourne‡

✓ Crianças HIV-infectadas com peso abaixo do p3: suplemento oral.

. *Maternal and Child Nutrition* (2007), 3, pp. 322–333

Conduta nutricional na lipodistrofia da AIDS

Dieta

- ↓ lipídios totais (não menos do que 20%)
- ↓ carboidrato (50 – 55% VCT)
- ↑ fibras (20 – 25g/dia)
- ↓ ácido graxo saturado (< 10%) e ↑ monoinsaturado (> 10%)
- ↓ consumo de álcool
- Ômega 3; 1,7g/dia – hipertrigliceridemia (> 1000mg/dl)

ADA REPORTS

J Am Diet Assoc. 2004;104: 1425-1441.

Dubé MP et al., Clinical Infectious Diseases 2000

Lipodistrofia e Sugestão de Pirâmide

ADA REPORTS

J Am Diet Assoc. 2004;104: 1425-1441.

HIV e metabolismo lipídico

Atividade física

- ↓ lipídios totais e LDL
- ↑ consumo de glicose
- ↑ HDL
- ↓ adiposidade visceral

Shevitz A et al., AIDS 2001

Vitaminas e AIDS

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Nutritional status and the 24-hour urine excretion of N1MN.

HIV-positive children and HIV-negative children who were or were not born of mothers with HIV-1 infection.

TABLE 2. *Energy and nutrient intake and daily urinary excretion of MNA of HIV-positive children (group 1), HIV-negative children born to HIV-positive mothers (group 2), and control children (group 3)*

Parameters*	Group 1 (n = 20)	Group 2 (n = 10)	Group 3 (n = 10)
Energy, kcal/d	3033 ± 1401	2894.4 ± 1008	2770 ± 694
Protein, g/d	92.8 (24.2–294)	90.5 (34.5–142)	95.8 (39.0–112.3)
Niacin, mg/d	18.0 ± 11.4	18.9 ± 8.0	14.2 ± 5.2
Children with niacin intake below DRI, %	22.2	10	20
Zinc, mg/d	9.25 (2.08–25.9)	9.2 (4.0–11.5)	7.7 (2.4–10.8)
Vitamin B_6, mg/d	2.6 (0.5–19.8)	2.7 (0.89–13.2)	2.1 (0.75–60)
Tryptophan, mg/d	1008 (154–3064)	895.4 (443–1299)	953.3 (234.6–1242)
Urinary MNA (mg/g creatinine)	4.68 (0.75–14.9)	3.74 (1.13–5.69)	3.85 (1.80–8.19)
Children with MNA <2 mg/g creatinine, %	15	10	10

*$P > 0.05$.

Daily niacin, tryptophan, vitamin B6, and zinc intakes did not differ across groups.

Urinary niacin values per gram of creatinine were similar and adequate across the groups.

Adequate nutritional status, intestinal absorption and stable clinical condition.

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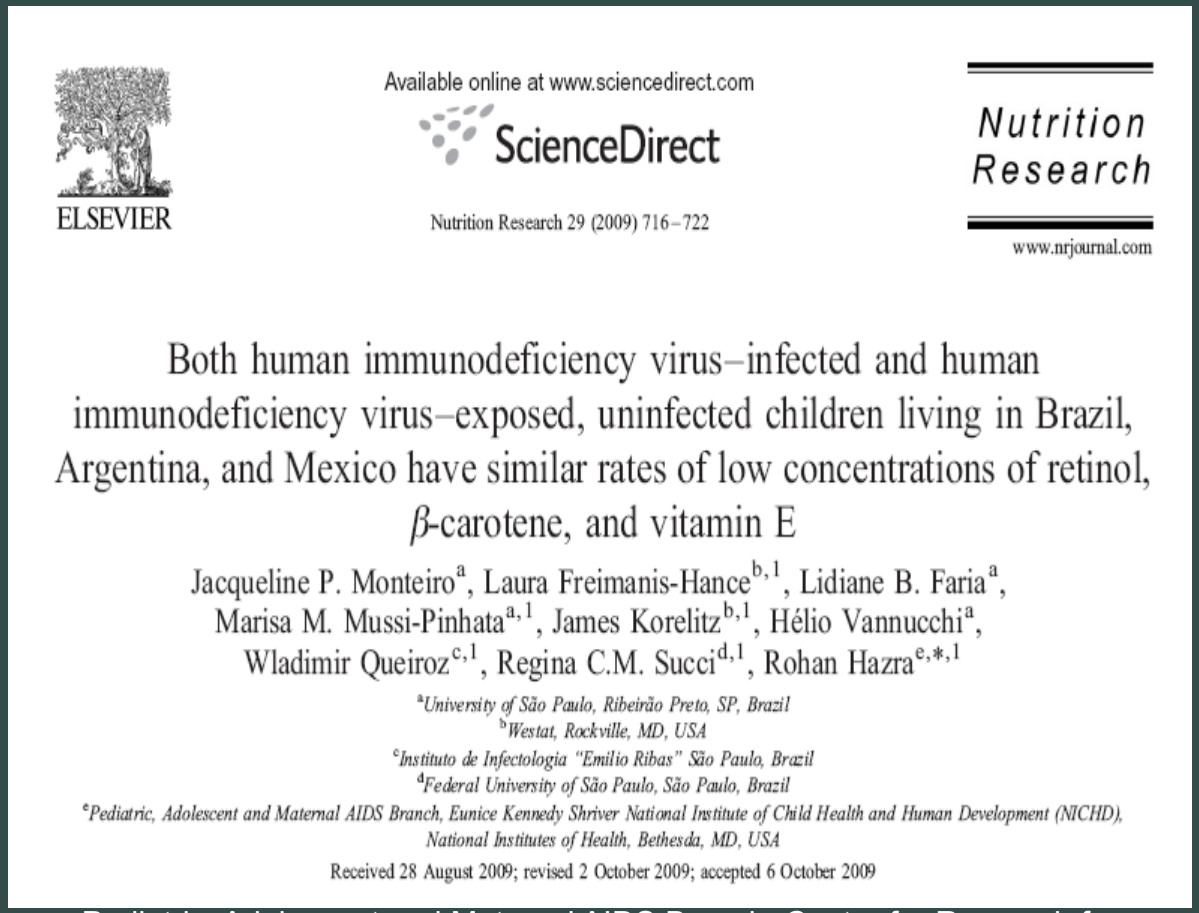

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Both human immunodeficiency virus–infected and human immunodeficiency virus–exposed, uninfected children living in Brazil, Argentina, and Mexico have similar rates of low concentrations of retinol, β-carotene, and vitamin E

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Cross-sectional substudy of a larger cohort study at clinical pediatric HIV centers in Latin America.

To describe the prevalence of low concentrations of retinol, β-carotene, and α-tocopherol in a group of HIV-infected Latin American children and a comparison group of HIV-exposed, uninfected children.

High-performance liquid chromatography.

Pediatric, Adolescent and Maternal AIDS Branch, Center for Research for Mothers and Children, Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), National Institutes of Health, Bethesda,MD

AIDS and Nutrition

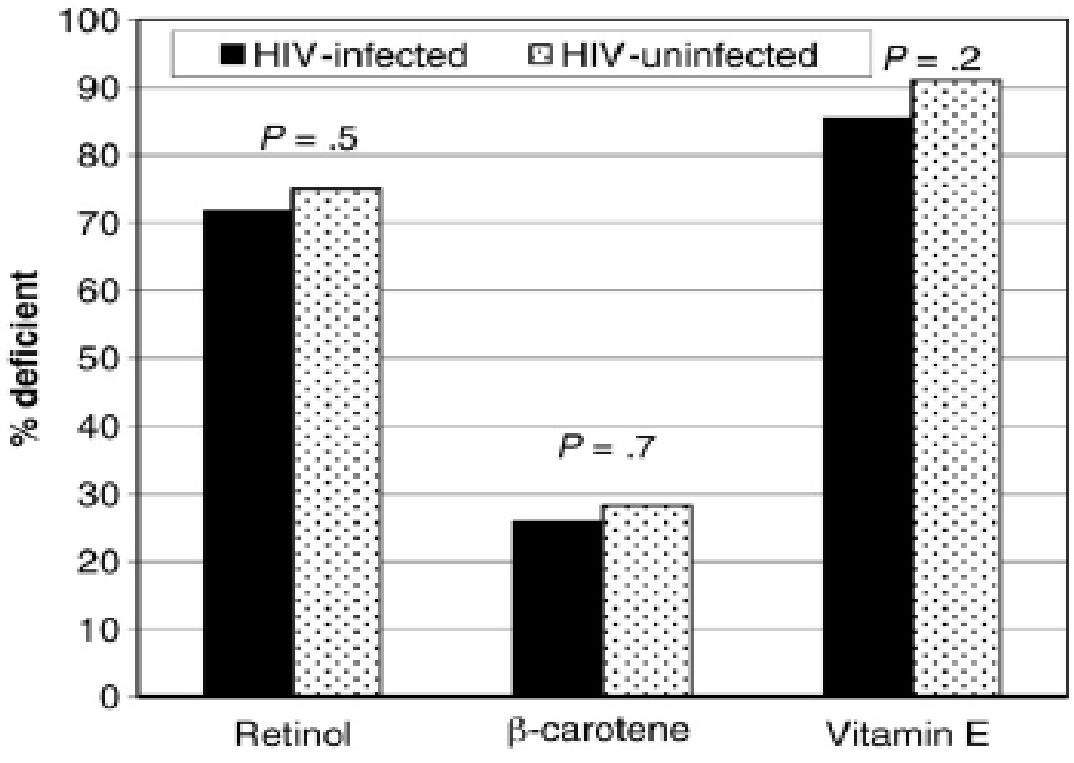

Fig. 1. Percentage of HIV-infected and HIV-exposed, uninfected subjects with low concentrations of retinol, β-carotene, and vitamin E ($P < .05$, statistical significance; Fisher exact test).

Rates of low concentrations:

75% for retinol, 27% for β-carotene, 89% α-tocopherol.

HIV-infected treated with antiretrovirals were less likely to have retinol deficiency, but no other HIV-related factor correlated with micronutrient low serum levels.

Because we did not examine a group without exposure to HIV, the results could be due to factors related to in utero HIV exposure, such as genetic variations in vitamin transfer protein genes.

Ingestão

Retinol

β-caroteno

Estresse oxidativo

Retinol sérico

Original article

Assessment of antioxidants status and superoxide dismutase activity in HIV-infected children

Camila Pugliese[a], *Rose Vega Patin*[a], *Cecilia Zanin Palchetti*[a], *Cristiane Chiantelli Claudio*[a], *Aída de Fátima Thomé Barbosa Gouvêa*[b], *Regina Célia de Menezes Succi*[b], *Olga Maria Silverio Amancio*[a], *Silvia Maria Franciscato Cozzolino*[c], *Fernanda Luisa Ceragioli Oliveira*[a,*]

Objective: This study aims to assess the nutritional status of selenium, copper and zinc; and also the erythrocyte superoxide dismutase activity of HIV-infected children compared to a control group.

Methods: A cross-sectional study was carried out with prepubertal HIV-infected children ($n = 51$) and their healthy siblings ($n = 32$). All biochemical measurements including plasma selenium, serum copper levels, serum and erythrocyte zinc levels and erythrocyte superoxide dismutase activity were evaluated according to dietary, clinical and biochemical parameters.

Results: Compared to the control group, the HIV-infected children had lower z-score values for height-for-age ($p = 0.0006$), higher prevalence of stunting (11.8%) ($p = 0.047$), lower selenium levels ($p = 0.0006$) and higher copper levels ($p = 0.019$). No difference was found concerning superoxide dismutase activity ($p > 0.05$). The HIV-infected group presented a higher proportion (45.1%) of children with zinc intakes below the estimated average requirement ($p = 0.014$); however, no association with zinc biochemical parameters was found.

Conclusion: HIV-infected children have an inadequate selenium and copper nutritional status, which could influence the progression to AIDS. An adequate micronutrient status could improve the clinical conditions in these patients and minimize free radical production and cellular oxidative stress.

BRAZ J INFECT DIS. 2014;18(5):481–486

Micronutrient supplementation in children and adults with HIV infection

Irlam JH, Visser ME, Rollins N, Siegfried N

This review should be cited as: Irlam JH, Visser ME, Rollins N, Siegfried N. Micronutrient supplementation in children and adults with HIV infection (Cochrane Review). In: *The Cochrane Library,* Issue 4, 2007. Oxford: Update Software.

Conclusão:

- ✓ **Até o momento existem benefícios da suplementação de vitamina A em crianças na redução da morbidade, da mortalidade e no aumento do crescimento; para adultos, atingir as DRIs de micronutrientes parece mais aceitável.**

Nutritional interventions for reducing morbidity and mortality in people with HIV

Mahlungulu S, Grobler LA, Visser ME, Volmink J

This review should be cited as: Mahlungulu S, Grobler LA, Visser ME, Volmink J. Nutritional interventions for reducing morbidity and mortality in people with HIV (Cochrane Review). In: *The Cochrane Library,* Issue 4, 2007. Oxford: Update Software.

Conclusão:

- ✓ **Ensaios clínicos pequenos e em lugares de melhor poder aquisitivo; nenhuma conclusão significativa pode ser feita sobre os efeitos dos macronutrientes na morbidade e na mortalidade.**

A Systematic Review of Nutritional Supplementation in HIV-Infected Children in Resource-Limited Settings

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Abstract

Background: In resource-limited settings, malnutrition is the major cause of death in young children, but the precise benefits of nutritional supplementation for HIV-infected children are not well understood. **Methods:** Two researchers reviewed studies conducted in low- or middle-income countries that involved macro- and micronutrient supplementation in HIV-infected individuals ≤18 years. **Results:** Fifteen studies focused on micronutrients, including vitamin A, zinc, multivitamins, and multiple-micronutrient supplementation. The 8 macronutrient studies focused on ready-to-use foods (4 studies), spirulina, whey protein, general food rations, and F75 and F100 starter formulas. Vitamin A was associated with improved mortality rates, ranging from 28% to 63%. Multiple-micronutrient supplementations were not associated with improvement of measured health outcomes. Ready-to-use foods were associated with improvement in certain anthropometrics. **Conclusion:** Periodic vitamin A supplementation is associated with reduced mortality. Macronutrient supplementation is linked to improved anthropometrics. More research is needed to determine how nutritional supplementation benefits this particularly vulnerable population.

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