Evaluation of cardiovascular disease risk in elderly patients, with human immunodeficiency virus infection on antiretroviral therapy

Veiga, C.[1], Rama, A.[1], Crespo, P.[2], Proença, M.[1]

[1] Pharmacy Unit; [2] Infectious Disease Unit. Centro Hospitalar e Universitário de Coimbra – Hospitais da Universidade de Coimbra, E.P.E., Coimbra, Portugal
catarinasofiav@gmail.com

HUC HOSPITAIS DA UNIVERSIDADE DE COIMBRA

Background

The increasing number of elderly patients with human immunodeficiency virus (HIV) infection, coupled with the prevalence of cardiovascular disease (CVD) at this age, and the side effects of antiretroviral therapy (ART), mainly related to cholesterol levels, led us to select them, as an at-risk population for clinical drug monitoring.

Purpose

Assessment of cardiovascular risk in elderly patients infected by HIV treated with antiretrovirals.

Methods

Retrospective study (2010) of HIV-infected elderly patients (≥ 65 years) monitored at the Infectious Disease Unit of the author's hospital. Data were obtained from patient medical records, pharmacy medicines database and laboratory test results.

Methods used to evaluate CVD:

❖ *Systematic Coronary Risk Evaluation* (SCORE) Those whose 10-year **absolute risk of a fatal cardiovascular event was directly estimated at AR ≥ 10%**, if elderly, **should be considered for treatment**. Portugal is considered low risk. For female diabetic patients results are multiplied by 5, for male patients by 3;
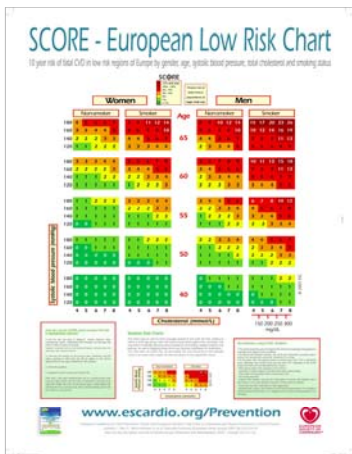

Figure 1. The new European Risk Chart based on SCORE data. For low CVD risk, regions are based on total cholesterol levels.
Adapted from Conroy et al, *Eur Heart J*. 2003,24:987-1003. Copyright © 2003 European Society of Cardiology. All rights reserved.

❖ *Framingham risk score* (FRS) Those whose 10-year risk of coronary heart disease (CHD - coronary death, myocardial infarction, angina), **absolute risk (AR) is predicted to be > 20 % should be considered for treatment**;
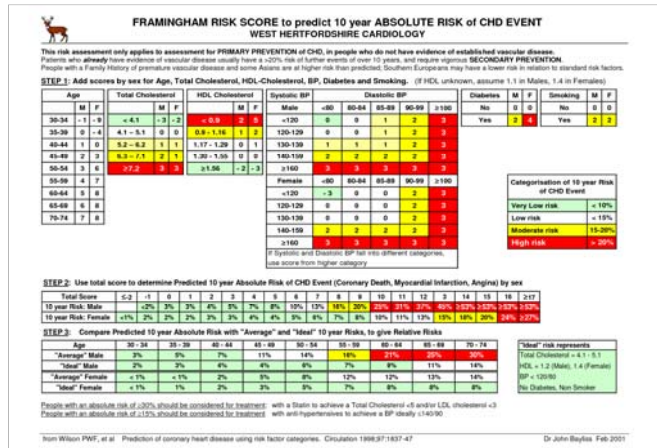

Figure 2. Charts for estimation of coronary heart disease (CHD) risk in men and women. (HDL = high-density lipoprotein; LDL = low-density lipoprotein; TC = total cholesterol.)
Adapted with permission from Wilson PW, D'Agostino RB, Levy D, Belanger AM, Silbershatz H, Kannel WB. Prediction of coronary heart disease using risk factor categories. *Circulation*. 1998;97(18):1843.

❖ *Atherogenic index* (AI) Predictor of **cardiovascular risk for patients with index >5**.
According to the Portuguese Society of Atherosclerosis-SPA *Consensus*.
(Accessible in: http://www.spaterosclerose.org/img_upload/SPA_Consensus.pdf)

spa **Atherogenic index** was calculated as serum total cholesterol (TC) /high-density lipoprotein cholesterol (HDL-C); This index has a significant practical significance, because, with the exception of patients in secondary prevention, with family history of cardiovascular risk or with early evidence of atherosclerosis subclinical, individuals who have a TC / HDL-C < 5 do not require drug treatment.
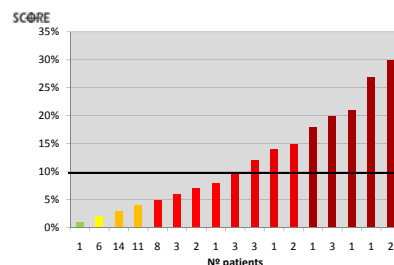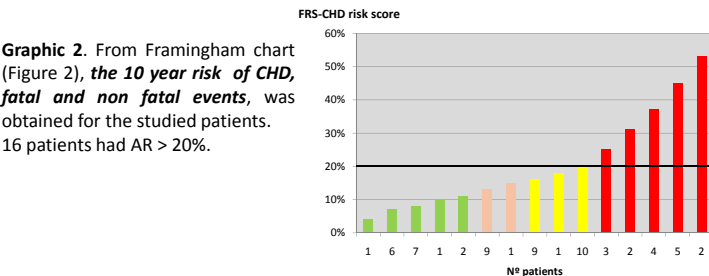
Results

63 patients

| 48 men	mean age 70.4 (65-84)	15 had diabetes	4 were smokers

Graphic 1. Using the SCORE low chart for the Portuguese population (Figure 1), **the 10 year risk of fatal CVD** was obtained for the studied patients.
17 patients had AR ≥ 10%.

Graphic 2. From Framingham chart (Figure 2), **the 10 year risk of CHD, fatal and non fatal events**, was obtained for the studied patients.
16 patients had AR > 20%.
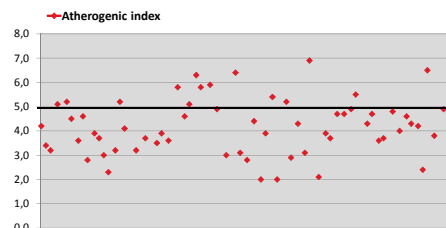
Graphic 3. Atherogecic index according to the SPA *Consensus* for the studied patients.
14 patients had AI > 5.

From the 63 patients, 23 presented either one or more CVD risk scales or index (Table 1) :

✓ FRS=16;

✓ SCORE=17;

✓ AI=9;

✓ FRS+SCORE=10;

✓ AI+FRS=4;

✓ AI+SCORE=0;

✓ FRS+SCORE+AI=5.

Patient (23)	SCORE	FRS	AI	Antiretroviral therapy
A	15%	16%	3,4	Emtricitabine/tenofovir+lopinavir/ritonavir
B	20%	45%	5,1	Emtricitabina /tenofovir+raltegravir+darunavir/ritonavir
C	10%	37%	5,2	Emtricitabine/tenofovir+efavirenz
D	5%	25%	3,6	Emtricitabine/tenofovir+efavirenz
E	12%	20%	3,9	Emtricitabine/tenofovir+lopinavir/ritonavir
F	12%	20%	4,1	Abacavir+lamivudine+tenofovir+fosamprenavir/ritonavir
G	20%	13%	3,5	Abacavir/lamivudine+efavirenz
H	12%	16%	3,6	Emtricitabina /tenofovir+raltegravir+darunavir/ritonavir
I	18%	45%	6,3	Emtricitabine/tenofovir+efavirenz
J	30%	45%	5,8	Abacavir+lamivudine+tenofovir+lopinavir/ritonavir
K	5%	37%	5,9	Lamividine+zidovudine+efavirenz
L	8%	37%	6,4	Emtricitabine/tenofovir+lopinavir/ritonavir
M	10%	31%	5,2	Emtricitabine/tenofovir+efavirenz
N	15%	20%	2,9	Abacavir/lamivudine+Atazanavir/ritonavir
O	5%	25%	4,3	Emtricitabine/tenofovir+efavirenz
P	7%	45%	6,9	Emtricitabina /tenofovir+raltegravir+darunavir/ritonavir
Q	21%	31%	2,1	Emtricitabine/tenofovir+Atazanavir/ritonavir
R	30%	37%	3,9	Emtricitabine/tenofovir+efavirenz
S	10%	13%	3,7	Nevirapine+lamivudine+tenofovir
T	27%	53%	4,9	Emtricitabine/tenofovir+nevirapine
U	14%	45%	4,3	Emtricitabine/tenofovir+nevirapine
V	4%	25%	6,5	Abacavir/lamivudine+efavirenz+lopinavir/ritonavir
X	20%	53%	4,9	Emtricitabine/tenofovir+efavirenz

These 23 patients were treated with at least one antiretroviral that induces hypercholesterolemia (7 showed elevated laboratory test results) and hyperglycaemia (12 had diabetes).

Antiretrovirals most commonly used: tenofovir+emtricitabine (35), lopinavir+ritonavir (13), zidovudine+lamivudine (9), abacavir+lamivudine (8) and efavirenz (18).

Diabetic patients, as well as those with elevated total cholesterol, presented a higher AR.

Conclusions

The elderly population studied presented an increased risk of CVD, confirmed by three evaluation methods, a fact probably also related to ART, since they all had in their therapeutic regimen, one or more medicines that increases total cholesterol and glucose.