HIV-associated lipodystrophy, the prevalence, associated factors and metabolic alterations in patients on long term antiretroviral therapy at the Kenyatta National Hospital

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Abstract:

Highly active anti-retroviral therapy (HAART) is widely available to HIV-infected individuals. Long term complications of these therapies such as lipodystrophy are associated with social stigmatization, reduced self esteem and poor adherence to HAART while the associated metabolic dysregulation mainly dyslipidemia and dysglycemia, may lead to premature and accelerated atherosclerosis. Objective: To determine the prevalence of lipodystrophy and the factors associated with its development among HIV sero-positive patients on highly active anti-retroviral therapy ~t the Kenyatta National Hospital, Kenya. The associated factors that were assessed include: - Age, gender, WHO stage of HIV infection at initiation of HAART, CD4 count, type and duration of anti-retroviral therapy, dyslipidemia and dysglycemia. Design: Cross-sectional prevalence study Setting: Kenyatta National Hospital, a tertiary health care facility Subjects: Consenting adults on highly active antl-retrovlral therapy for at least six months. Outcome measures: Prevalence of lipodystrophy; associated factors - age, gender, CD4 cell count, WHO stage of HIV infection at initiation of HAART, combination of and duration of anti-retroviral therapy, metabolic dysregulation such as dyslipidemia defined as presence of any of the following: raised total cholesterol, raised LDL cholesterol, low HDL cholesterol, raised triglycerides; and dysglycemia defined as presence of impaired fasting glucose or diabetes mellitus and the relationship between these factors and lipodystrophy. Results: Between August and December 2007, 318 patients were screened and 265 recruited of whom 59.6% were female. The overall prevalence of lipodystrophy was 51.3%. Lipoatrophy was the most common phenotype described in 44% of all the patients. Patient age, gender, WHO stage of HIV infection at initiation of HAART, level of baseline and most recent CD4 counts were not associated with the development of lipodystrophy. Use of HAART for 18-36 months was associated with the development of lipodystrophy (p=O.OOO OR 2.1 CI 1.2-3.5) as well as use of HAART for longer than 36 months (p=O.OOO OR 2.3 CI 1.2-4.6). 52.5% of patients on stavudine based regimen developed lipodystrophy (p= 0.117) and 51.1% of patients on zidovudine based regimen developed lipodystrophy (p= 0.757).The patients on non-stavudine non¬zidovudine based regimen also had significant lipodystrophy (p=O.OOO) Dyslipidemia was found in 55.4% of patients with lipodystrophy and normal lipid levels in 36.4% (p=0.007 OR 2.2 CI 1.3-4.6). High total cholesterol levels were found in 57% of patients with lipodystrophy and normal levels in 43% (p=0.008 OR 1.94 CI 1.2-3.2). LDL- cholesterol was raised in 45.9% of patients with lipodystrophy and normal in 54.1 % (p= 0.076 OR 1.5 CI 0.95-2.6). HDL levels were low in 45.2% of patients with lipodystrophy and normal in 54.8% (p=0.257 OR 1.3 CI 0.8-2.2) while triglycerides levels were found to be elevated in 65.9% of patients with lipodystrophy and normal in 34.1 % (p=O.OOO OR 3.8 CI 2.3-6.4). Among patients with lipodystrophy, normal fasting blood sugars were found in 68.9%, impaired fasting blood sugar in 25.1% and diabetes mellitus in 5.1% (p=0.102). On multivariate analysis, patients who had been on HAART for 18-36 months were 4.4 times more likely to have lipodystrophy than those who had -, been on HAART for 6-18 months (p<O.0001) and those who had been on HAART for longer than 36 months were 6.179 times more likely to have lipodystrophy than those who had been on HAART for 6-18 months (p<0.0001). In addition, patients on HAART who had elevated triglycerides were 2.9 times likely to develop lipodystrophy than those with normal triglycerides (p<0.0001) and those on HAART who had elevated total cholesterol were 1.28 times likely to develop lipodystrophy than those who had normal total cholesterol (p=O.388). Conclusions: Lipodystrophy was common in patients on long term HAART. Most of these patients were on stavudine or zidovudine based combination therapy. Duration of HAART use and elevated triglyceride levels were found to be predictors of lipodystrophy. Age, gender, WHO stage of HIV at initiation of HAART, level of nadir and most recent CD4 count and type of HAART were not significantly associated with lipodystrophy.