

## **Objective assessment of facial lipoatrophy changes in a cohort of HIV infected patients taking combination antiretroviral therapy**

### **ABSTRACT**

Background: An objective method is needed for assessing facial fat changes in HIV-infected patients. Objective: To measure facial fat changes using three-dimensional laser scans (LS) and examine the relationship with clinically assessed lipoatrophy changes and dual-energy X-ray absorptiometry (DEXA) measured body composition changes in a cohort of patients taking combination antiretroviral therapy (ART). Method: Consecutive patients taking ART for at least 12 months were recruited from an outpatient clinic. Clinical lipoatrophy assessment, LS of the face, and whole-body DEXA were performed at baseline and repeated after 12 months. Cheek surface volume (CSV) change and cheek surface point displacement (CPD) change were calculated from the LS using a standardized technique. Results: Baseline and follow-up assessments were obtained in 146 patients. In the 102 patients with stable clinical lipoatrophy grade during follow-up, there was no CSV change (0.0 +/- 1.7 mL). In the 27 patients with clinical lipoatrophy progression, CSV decreased by 1.3 +/- 1.8 mL ( $p < .001$  vs. stable patients); in the 17 patients with clinical facial lipoatrophy recovery, CSV increased by 1.0 +/- 1.7 mL ( $p = .092$  vs. stable patients). CSV change was significantly related to limb fat change in the overall cohort ( $r = 0.32$ ,  $p < .001$ ). Multivariate regression analysis showed that stavudine use was a significant independent predictor of CSV (beta = -0.20,  $p = .038$ ). Similar results were seen with calculation of CPD change. Conclusion: LS can detect facial lipoatrophy changes in a cohort of patients over time and can clearly detect the effects of individual drugs. This may be an objective and reliable method to assess facial fat change in future clinical trials.