

Poster presentation

## Osteonecrosis in HIV-infected patients treated with HAART: a case control study of predictors

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### Purpose of the study

Osteonecrosis (ON) represents a rare but increasingly reported metabolic complication in patients with advanced HIV infection. It has been related to a number of behavioural and immunological risk factors, as well as to the duration of both HIV infection and antiretroviral therapy. We retrospectively investigated the incidence of ON at our institution in the HAART era, and designed a case-control study to look for potential predictors of disease.

### Methods

Between 1997 and 2007, all incident cases among the 237 patients treated with any line of HAART for a mean of 37 months were characterized by standard Rx scans, bone scintigraphy and selective computed tomography or MRI scan of the interested district(s). We evaluated age, sex, BMI, cigarette smoking and alcohol abuse, QUS-measured bone density, CD4 T-cell counts, HIV viral load, duration of HIV infection and HAART, use of steroids, blood glucose, total cholesterol and triglycerides, total serum IgE levels, presence of autoantibodies and lipodystrophy. A control group of HIV patients on HAART was selected, without ON and matched for age, sex and nadir CD4 T-cells at the start of therapy.

### Summary of results

Eight patients were diagnosed with ON (3.4%); 16 controls were selected. Among cases, five were males, with a mean age of 39.5 years and nadir CD4 T-cells  $110 \pm 52/$

mm<sup>3</sup>; four had hip, four had knee involvement, bilateral in two cases for each site. All cases presented due to long-lasting localized pain; one was also diagnosed with a secondary bone fracture. Statistical analysis revealed a significant association of ON with exposure to steroids ( $p = 0.001$ ), multiple co-morbidities ( $p = 0.032$ ) and exposure to more drugs ( $p = 0.012$ ), and high titres of total IgE ( $p < 0.01$ ). Immune recovery, cigarette smoking and bone density among all other factors investigated were not related.

### Conclusion

Our investigation confirms that ON is not rare during long-term treatment of HIV infection. Better knowledge of the condition, furthermore, may help prompt diagnosis of incident cases in the future. Patients at higher risk have concomitant advanced HIV infection at diagnosis, presence of multiple co-morbidities and treatment with other drugs in addition to HAART, long-term exposure to steroids and high levels of serum IgE immunoglobulins. Cigarette smoking was very frequent both among cases and controls and its contributory role to disruption of bone microvasculature cannot therefore be excluded by our experimental design.