Stress Fractures of the Foot in HIV Patients

S Chinthapalli, S Mandalia, R Jones, M Bower, M Nelson

Department of HIV Medicine, Chelsea & Westminster Hospital, London, UK

Introduction

HIV is associated with reduced bone mineral density (BMD); a major risk factor for bone fractures. The prevalence of osteoporosis is up to three times higher than in HIV-negative individuals [1]. Anti-retroviral therapies have also been implicated in reduced BMD.

Stress fractures of the foot lead to pain and reduced mobility. They are frequently reported in military recruits and athletes where they are thought to be associated with repetitive high impact strain on the feet. In the general population a major risk factor is reduced bone mineral density. We report our experience of foot stress fractures at a tertiary HIV centre.

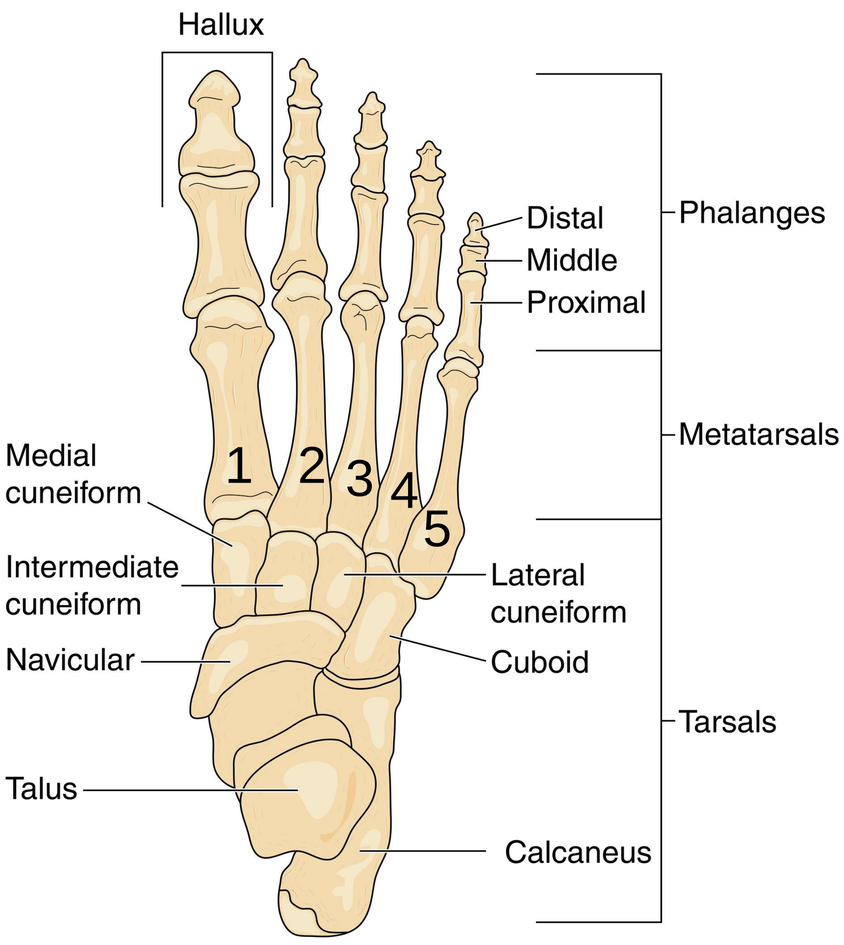
Methods

MRI Foot reports of HIV positive patients between 2007-2011 were reviewed. In total there were 45 MRI Foot images, with eight patients having sustained stress fractures. Electronic patient records were also reviewed for clinical information.

Results

Mean age: 49yrs

All eight patients were male between the ages of 39 – 65 years. Only one patient had history of trauma documented at the time of fracture



Fractures sustained:
Metatarsal bones 86%
Cuneiform bones 25%

38% patients sustained more than one foot fracture

Commonest bone fractured : Second metatarsal (36%)

Bone Mineral Density (BMD) scan results:

T scores (spine & femur) : ≤ - 2.5 = 0%

T scores (spine & femur): – 1 to – 2.5 = 63%

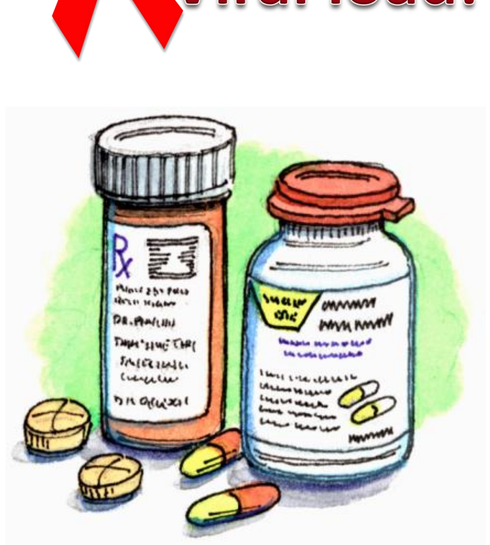
(*BMD scans were all performed between 13 months prior to the fracture or in one case one week after)

International Osteoporosis Foundation:
Osteoporosis: T score ≤ -2.5 Osteopenia: T score -1 to -2.5

Vitamin D level (mean): 67nmol/L
(*Vitamin D levels were all performed within 2 months prior to the fracture or within one month after)

CD4 count: 336 cells/µl (mean) (range = 89–500 cells/µl)

Viral load: Undetectable except one (viral load 1277)



A univariate conditional logistic regression using 40 case controlled matches showed the patients with stress fractures were more likely to have been exposed to atazanavir, azidothymidine, darunavir, lopinavir, ritonavir, stavudine and didanosine ($p<0.05$). Control patients were matched for gender, ethnicity, age, CD4 count, viral load and duration on antiretrovirals.

There was no association with exposure to or duration on tenofovir.

Conclusions

The findings suggest that stress fractures of the foot in individuals with HIV may be linked to variables such as ARV exposure. Interestingly, fractures appeared independent of low BMD and high foot impact activities in the main.

Certain anti-retroviral therapies could possibly predispose to stress foot fractures.

Further exploration is required with greater patient numbers. Data regarding antiretroviral therapy and preceding trauma should be further corroborated with patient surveys. Investigation of other potential variables in stress fracture mechanisms , such as physical activity and variations in foot anatomy, is also warranted.

References

1. Brown TT, Qagish RB. Antiretroviral therapy and the prevalence of osteopenia and osteoporosis: a meta-analytic review. AIDS. 2006; 17: 2165-74

Chelsea and Westminster Hospital NHS
NHS Foundation Trust