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Jacobs Journal of AIDS/HIV

Case Report

A Case of Cardiomegaly seen on a Routine Chest X-ray

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Received: 07-12-2016

Accepted: 09-22-2016

Published: 10-31-2016

Summary

This is a case of cardiomegaly seen on a routine baseline chest x-ray in a fit and well 47 year old HIV positive man who is a bodybuilder and has admitted to injecting steroid use. Subsequent echocardiography confirmed concentric left ventricular (LV) hypertrophy and cardiac MRI. There was a reduction of LV mass and LV end diastolic mass 6 months later after weight based detraining and no injecting steroid use which can be considered as a useful preventive measure of possible future complications. Routine chest X-rays should be considered for all patients living with HIV.

Case Report

Chest x-rays are usually done in HIV patients often to look for infective or immunosuppressive related conditions when symptoms or signs indicate the need. Baseline chest x-rays for new or transfer patients are often not done and guidelines do not suggest this [1].

A 47 year old Caucasian managing director was transferred to our HIV out-patients unit. He has had HIV since 1992 and was stable on combivir and nevirapine since 2000 having ongoing robust CD4 counts of over 500 and viral loads <50. He had no symptoms to report especially with respect to his cardiovascular system. He admitted to injecting intramuscular steroids regularly in the past 12 years mainly consisting of stanabol and a testosterone based analogue and uses this regimen once or twice a week for up to 10 weeks a year. He trains 4-5 times a week based on a weight based regimen heavily in his local gym comprising of bench presses 100kg and leg presses 250kg at a time respectively. He admitted to occasionally using marijuana, cocaine and mephedrone on a recreational basis but denied tobacco use. He drank up to 14 units of alcohol a week.

His BMI was 32 with a body weight of 103.5 kg and height of 1.85 metres. His pulse was 67 and blood pressure 132/79 and the rest of the examinations were unremarkable. A chest x-ray showed cardiomegaly and a subsequent echocardiogram showed concentric left ventricular hypertrophy. Due to concerns about cardiomyopathy, possibly related to his longstanding HIV, a cardiology referral was made. A 12 lead ECG showed sinus rhythm, borderline LV strain and quite extensive ECG changes with ST depression in the inferior and lateral territory. A transthoracic echo displayed normal LV size, normal systolic function but confirmed mild concentric LV hypertrophy. The posterior wall was 14.6mm and had septal damage of 14mm. A subsequent cardiac Holter monitor ruled out ventricular arrhythmias and a cardiac MRI scan done at the John Radcliffe Hospital, Oxford confirmed the echo findings (Figure panels A and D).

Despite much reluctance, the patient switched to a more cardiovascular based regimen and cut down his weight based training considerably. He also stopped injecting steroids use. A subsequent cardiac MRI demonstrated a mild reduction (11% change) in LV mass and LV end-diastolic volume (9% change) after 6 months of detraining and termination of steroid use (Figure panels B and E). Late Gadolinium images show no myocardial enhancement indicating the absence of scarring or fibrosis (Figure panels C and F).

On review, he felt 'fitter' and has come to enjoy his new training regimen as well abstaining from steroid use. This suggested possible prevention of future cardiac compromise. A DEXA scan was done and showed above average bone mineral density at the lumbar spine and proximal femur and

no osteopenia or osteoporosis seen due to steroid use, HIV or antiretroviral therapy. He switched his antiretroviral therapy to Atripla wanting a lesser pill burden and is currently doing well.

Acknowledgment

Full patient consent has been obtained for the purposes of educating healthcare professionals and there is no conflict of interest declared.

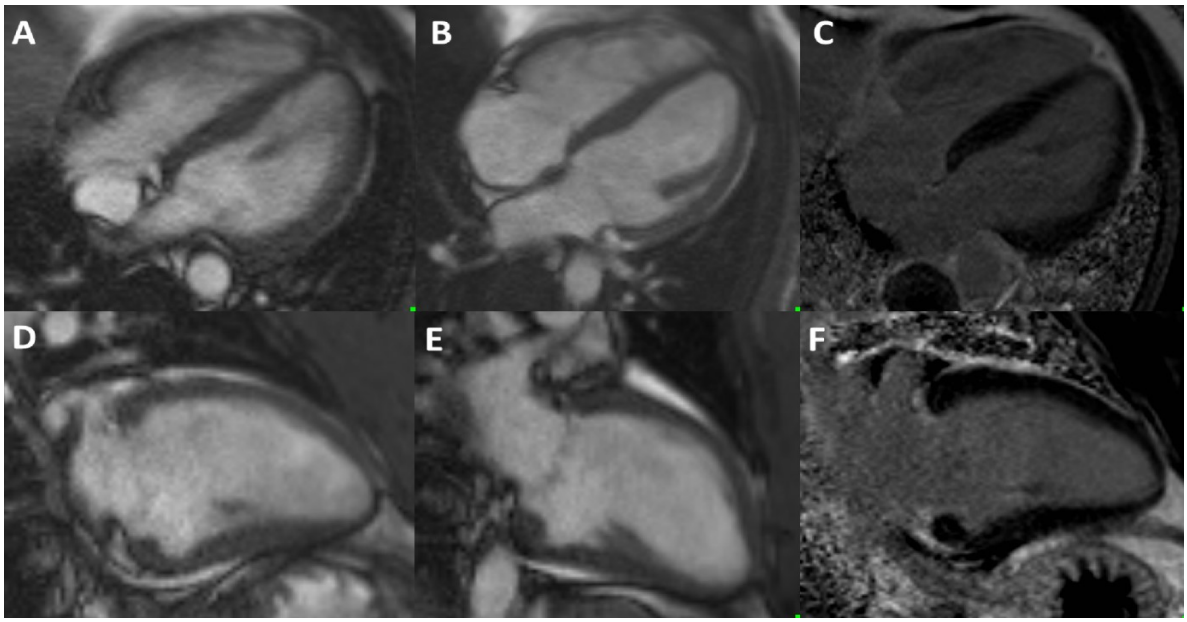

Figure 1. Still end-diastolic frames from horizontal long-axis (panel A and B) and vertical long axis cines (panels D and E). Panels A and D are from the initial cardiac MR scan, whereas panels B and E are from the follow-up scan.
(Thanks to Drs Raj Khianni, Saul Myerson and Theodoros Karamitsos, Consultant Cardiologists for providing and interpreting the images)

Discussion

This case emphasises the benefits of doing baseline chest x-rays in newly diagnosed and longstanding patients living with HIV even if no symptoms or signs are seen. Asymptomatic HIV infection and long term antiretroviral use are associated with myocardial hypertrophy and preclinical diastolic dysfunction [2] and prevalence of subclinical functional and structural cardiac abnormalities was greater than expected when corrected for age [3]. It is unclear in how frequent chest x-rays should be done but can pick up conditions unrelated to HIV infection or immunosuppression directly. HIV infection is associated with greater LV mass but not with a higher prevalence of LV mass [4]. In developed countries, an approximately 30% reduction in the prevalence of human immunodeficiency virus (HIV)-associated cardiomyopathy, possibly related to a reduction of opportunistic infections and myocarditis [5] has been seen primarily due to antiretroviral therapy. It is also well documented that anabolic steroids can cause changes similar to cardiomyopathy and heart failure which lead to cardiac morbidity and mortality [6]. As our HIV cohort is surviving longer into older age groups, LVH may be seen more often and more surveillance is encouraged. A careful drug history, both medical and recreational is crucial as potential changes can be reversed by addressing lifestyle behaviours and should be a priority in the management of chronic HIV infection [3].

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