

## ASSOCIATION BETWEEN LOW 25(OH) VITAMIN D LEVELS, ANTI-RETROVIRAL THERAPY AND METABOLIC PROFILE IN A COHORT OF TREATED AND THERAPY NAÏVE HIV POSITIVE PATIENTS IN WESTERN AUSTRALIA

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Vitamin D has well known effects on bone metabolism but there is increasing evidence for its role in immune regulation and cardiovascular risk. Although vitamin D deficiency is common in Australia and HIV populations in the developed world, epidemiological data surrounding 25-OH vitamin D levels (25(OH)D) and associated factors in Australian HIV patients is limited.

A cross-sectional audit was conducted on 266 HIV positive patients in the Western Australian cohort looking at the prevalence of and co-variates relating to 25(OH)D deficiency. Log-transformed measures of 25(OH)D were analysed via linear regression modelling.

Our studied cohort was predominantly male 209/266(79%) and on antiretroviral therapy (ART) 193/266(73%). More than 30% of individuals had pigmented skin (6% Indigenous Australians, 11% African, 7% South-East Asian, 6% Indian and 3% other Asian/Melanesian). 200/266 patients (75%) had insufficient 25(OH) D levels (<75nmol/L) and 44/266 (17%) deficient 25(OH)D levels (<30 nmol/L). Consistent with published literature, 25(OH) D levels of pigmented patients were considerably lower than those of white Caucasians (mean reduction of 38%,  $p<0.0001$ ). Seasonal effects on 25(OH) D levels were also observed: compared with winter, measures obtained in spring were 4% higher ( $p=0.6$ ), in summer 19% higher ( $p=0.07$ ) and in autumn 34% higher ( $p=0.001$ ). Independent of pigmentation and season, neither current ART regimen ( $p=0.5$ ) or duration of therapy ( $p=0.5$ ) were associated with differing 25(OH) D levels ( $p=0.5$ ). However, particular treatment effects noted included current tenofovir-containing ART (associated with 21% increase in 25(OH) D,  $p=0.01$ ) and current efavirenz-containing regimens (associated with 19% decrease in 25(OH) D levels,  $p=0.009$ ). Although there was no association between 25(OH) D and BMI ( $p=0.4$ ), lower 25(OH)D levels were associated with higher fasting insulin ( $p=0.04$ ) and fasting triglyceride levels ( $p=0.0002$ ).

Our study confirms the high prevalence of 25(OH)D deficiency in treated HIV patients and the expected strong effect of pigmented race and seasonality. Specific treatment effects observed that may arise from ART effects on vitamin D metabolism and the association between lower 25(OH)D and metabolic parameters warrant further investigation.