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The vitamin D status of Australian dermatologists

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Vitamin D is necessary for bone health but low body stores have also been implicated in increasing the risk of other diseases, including cancers (especially cancer of the colon), diabetes, and multiple sclerosis.¹ Studies of parathyroid metabolism have suggested that a 25(OH)D level of 50 nmol/L is needed for optimum health, although some authors recommend that a level of 75 nmol/L is necessary for healthy bones.² A consensus is emerging that vitamin D insufficiency is present when the serum 25(OH)D level is < 50 nmol/L.

Recent studies have found that vitamin D insufficiency is common in sunny Australia, not only in institutionalized patients but also in the general population.^{3–5} One study in the temperate south of the country found that 40% of women had serum 25(OH)D levels < 50 nmol/L.³ Even in the subtropical north of Australia, vitamin D insufficiency was found to be common, with 20% of a surveyed population having serum 25(OH)D levels < 50 nmol/L.⁴

Australian dermatologists, who are heavily involved with skin cancer management, are constantly warning patients and the general population of the risks associated with sun exposure. This study aimed to determine if serum vitamin D levels were low in this 'sun-smart' group. The study was approved by the local ethics committee and all participants gave informed consent.

During the winter (June to August in Australia) of 2006, the serum 25(OH)D levels of the study group and a control group, all living in southern Australia (below 36° south) were measured. The study group comprised 47 dermatologists [27 men, 20 women; mean age for the group 47 years (men 51 years, women 46 years), range 33–65]. This group made up 75% of the eligible dermatologists in the study region, and comprised both white and East Asian participants.

There were 64 patients in the control group [28 men, 36 women; mean age for the group 54.7 years (men 56.9 years, women 53.1 years), range 29–69]. The control group comprised white outpatients seen consecutively

by dermatologists for various skin diseases over the same period. The diseases included premalignant lesions, skin cancer, inflammatory skin diseases and acne. Exclusion criteria were use of vitamin D supplements or treatment with ultraviolet (UV) light.

Blood for vitamin D estimation was drawn between June and the end of August for both groups, and the serum 25(OH)D level was determined by radioimmunoassay (Liason system; Diasorin, Brisbane, Australia). Serum parathyroid levels were not determined because it is well documented that serum parathyroid levels rise as the 25(OH)D level falls < 50 nmol/L.⁶

For the study group, the average serum 25(OH)D was 34.4 nmol/L (range 5–84). Only six (13%) of the dermatologists had serum 25(OH)D levels > 50 nmol/L but seven (15%) had serum 25(OH)D levels ≤ 20 nmol/L. There was no significant difference in the average serum 25(OH)D level between men (35 nmol/L) and women (34 nmol/L) or between white Australians (35 nmol/L) and Asian Australians (35 nmol/L).

The average serum 25(OH)D level of the controls was 44.7 nmol/L (range 19–170), which was significantly higher than that of the dermatologists ($P < 0.05$). In total, 13 controls (21%) had serum 25(OH)D levels ≥ 50 nmol/L, and 3 (4.7%) had serum 25(OH)D levels < 20 nmol/L. There was no significant difference in the average serum 25(OH)D between men and women.

This study found that vitamin D insufficiency was common among dermatologists in temperate Australia during the winter of 2006. In total, 83% of those tested had serum 25(OH)D levels < 50 nmol/L, which is considered to be the minimum needed for good health.^{1,2} It was of concern that 15% had serum levels of ≤ 20 nmol/L, a level associated with the development of osteomalacia and rickets.⁷ For comparison, the average serum 25(OH)D level of the dermatologists was lower than that of elderly inpatients in a Melbourne Hospital. A study of 65 such patients, with a median age of 81 years, found an average serum 25(OH)D of 35.9 nmol/L.⁸

It is possible that the vitamin D levels of dermatologists and controls were low because it was winter. However, it should be noted that the winter sun over Melbourne produces ultraviolet light levels sufficiently high to produce adequate levels of vitamin D with adequate exposure.⁹ This was shown in a study of healthy women from the same region, who had an average level of 59 nmol/L during winter.³

The study was biased towards dermatologists who were interested or concerned enough about their serum 25(OH)D levels to participate in this study. However, three-quarters of the dermatologists in the study region took part, which allows meaningful assessment of the results.

Dermatologists are heavily involved in educating patients and the general public regarding the dangers

of sun exposure. Consequently, it is likely that dermatologists avoid sun exposure because of the risk of skin cancer and, because in Australia food is not routinely fortified with vitamin D, a high prevalence of vitamin D insufficiency has occurred. These dermatologists should consider boosting their 25(OH)D levels, especially in the winter, with conservative sun exposure and/or vitamin D supplements. Public education campaigns should also be tempered to avoid the risk of too much sun avoidance.

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Disseminated cutaneous *Mycobacterium kansasii* infection in an patient infected with the human immunodeficiency virus

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People infected with the human immunodeficiency virus (HIV) are at a greater risk of mycobacterial infection and more than half of HIV-infected patients in developing countries are co-infected with mycobacteria. Therefore, mycobacterial infection is an important life-threatening

complication in patients with HIV. In addition, immunocompromised hosts with both tuberculosis and nontuberculous mycobacterial infections often show atypical clinical features, which can make it difficult for clinicians to make a precise diagnosis. We report a case of *Mycobacterium kansasii* infection in an patient with acquired immunodeficiency syndrome (AIDS) who developed extensive, cutaneous nodules and ulcers without any sign of pulmonary involvement.

A 34-year-old woman was referred to our dermatology clinic with an 8-month history of high fever and disseminated subcutaneous nodules and skin ulcerations.

On physical examination, subcutaneous nodules, up to 60 mm in size, scattered over her face (Fig. 1a) and limbs. On the lower left thigh, ankle and forearm, cutaneous ulcers, 20–40 mm in size were seen (Fig. 1b,c).

Histopathological examination of a biopsy taken from a nodule on the left forearm showed a large infiltrate of neutrophils associated with nontuberculous granuloma (Fig. 1d). Ziehl–Neelsen stain showed numerous acid-fast bacilli, which were confirmed as *M. kansasii* by DNA hybridization studies.

Results of laboratory investigations showed that the patient was positive for HIV-1, and her peripheral CD4 cell count was zero. Systemic examination showed extracutaneous signs of *M. kansasii* infection, including pulmonary nontuberculous mycobacteriosis.

The patient was treated with isoniazid 300 mg/day, ethambutol 750 mg/day, rifampin 450 mg/day and clarithromycin 800 mg/day, which resulted in gradual improvement. One month after beginning antimycobacterial treatment, the patient was started on highly active antiretroviral treatment.

M. kansasii is a slowly growing species that usually inhabits water supplies, swimming pools and sewage, and seldom infects healthy people.¹ However, immunosuppressed patients are often infected with *M. kansasii*, which usually causes pulmonary infection. Cutaneous *M. kansasii* infection is very rare and importantly, most cases of cutaneous *M. kansasii* infection have occurred in patients who are immunocompromised due to chemotherapy or immunosuppressive therapy for conditions such as autoimmune disease, renal or cardiac transplantations.^{2,3} Cutaneous *M. kansasii* infection without pulmonary involvement has been reported in only two patients with AIDS, who both showed solitary skin lesion. One patient had an asymptomatic ulcerative lesion around the right inguinal fold and the other had abscess formation on the thigh associated with regional lymph-node enlargement.^{4,5} Our patient differs from these previous reports in that she had severe disseminated skin lesions, probably due to the considerably reduced number of peripheral blood CD4 cells.

The population of people infected with HIV has been increasing annually worldwide. In addition to the commonly observed nontuberculous mycobacterial