LETTERS TO THE EDITOR

Risk of tuberculosis in immigrant Asians: culturally acquired immunodeficiency

I was interested to see in the paper by Dr PJ Finch and colleagues (January 1991;46:1-5) the theory that vitamin D deficiency causes immunosuppression and increased host susceptibility to tuberculosis was put forward as a possible cause of the increased incidence of tuberculosis, particularly glandular tuberculosis, in Hindu immigrants. Perhaps because of the authors' gastroenterological interests they see dietary factors as a major cause of vitamin deficiency and therefore susceptibility to disease. Dietary patterns, however, probably do not differ greatly between Britain and their country of origin, and are therefore unlikely to make much contribution to the cause of this apparent 'acquired immunodeficiency of immigration.' A Hindu Vegan in Wandsworth was probably a Hindu Vegan in India. Vitamin D reduction due to decreased exposure to sunlight on immigration to Britain, however, may well be a major factor. Mean serum vitamin D concentrations (25(OH)D3) have been shown to drop four-fold, or more, on emigration from Asia to Britain.

Asian individuals with tuberculous infection who are able to contain the infection because of satisfactory host immunity while in their sunny country of origin suffer a dramatic fall in the storage form of vitamin D (25(OH)D3) on emigrating to the United Kingdom. In some individuals this may affect local production of the active hormone 1,25(OH)2D3, resulting in a relative decline of lymphocyte and macrophage activation. The previously contained infection then causes overt disease. This would explain why most individuals present within a relatively short time (five years) of arrival in Britain.

The fact that the pattern of tuberculosis in HIV positive patients seems to resemble the pattern of disease in Asian individuals in Britain has been pointed out before. The sequence of events is probably similar in these patients. An individual with tuberculous infection becomes immunocompromised (either from HIV infection or from vitamin D reduction) and the extrapulmonary and glandular pattern of disease emerges.

Much more detailed work on the immunology of both tuberculosis and HIV infection is needed; it may even be that vitamin D has a role in the treatment of AIDS.

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AUTHORS' REPLY

We are grateful to Dr Davies for his letter and support for our suggestion that vitamin D lack and resultant decline in monocyte activation may be important in explaining the pronounced differences in risk of tuberculosis among Asian immigrants in the United Kingdom. We accept that Asian dietary practices are unlikely to change with emigration, but it has been shown that where exposure to the sun is limited the risk of metabolic bone disease is determined by dietary factors.1 In a prospective study of Asians presenting at the medical outpatient clinic in Wandsworth we have found that osteomalacia is almost exclusively a disease of vegetarian Hindu Asians, and we believe that this may help to explain why it is the Hindus who are at particular risk of developing tuberculosis rather than the Muslims, who have very similar exposure to the sun.

The mechanism by which vegetarianism may produce vitamin D deficiency is not clear as the contribution of ingested ergocalciferol to the physiological economy of vitamin D is thought to be negligible. It has been suggeseted that calcium depletion caused by binding to fibre and phytate may lead to secondary hyperparathyroidism and accelerated catabolism of 25-hydroxy vitamin D.2 Another possibility is that the absence of the normal dietary inducers of vitamin D function oxidases found in meat, eggs, and cheese may constrain the hydroxylation of cholecalciferol.3

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Corrections

Hurt lung: a domestically acquired pneumonoconiosis of mixed aetiology

Silicosis in a Himalayan village population: role of environmental dust

We regret that "silicon" is misspelt as "silicone" in these two papers—in the first paper, by Drs JP Grobbelaar and ED Bateman (May 1991;46:334-40)—on page 339, column 1, line 5; and in the second paper, by Dr T Norboo and others (May 1991;46:341-3), on page 341, lines 28 and 29 of the abstract, and on page 343, lines 9 and 17 of "Results."