

Vitamin D deficiency in multicultural primary care: a case series of 299 patients

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ABSTRACT

An increase in diagnoses of vitamin D deficiency prompted a review of cases from four general practices. Of the 299 cases identified, the predominant patient group comprised adult Somali females presenting with symptoms of chronic musculoskeletal pain. Women of childbearing age were particularly at risk. Known at-risk groups were not receiving supplementation. Significant clinical need appears not to be met in this population group and consideration of vitamin D deficiency during consultations is warranted.

Keywords

osteomalacia; rickets; Somalia; vitamin D deficiency.

INTRODUCTION

The role of vitamin D in the prevention of chronic disease is the subject of much research.^{1,2} In the UK, some population groups, particularly the Asian community, have been recognised as being at risk of vitamin D deficiency for many years.^{3,4} With changing patterns of immigration to the UK there is emerging evidence that other population groups are also at risk,⁵⁻⁷ although there is little in the recent literature emerging from primary care. Patients with chronic musculoskeletal pain frequently present to general practice. Vitamin D deficiency is one cause that, if identified, can be treated safely and effectively.

In 2004 GPs from four neighbouring practices in north Bristol identified increasing numbers of patients presenting with chronic musculoskeletal symptoms due to vitamin D deficiency. These practices, with a combined list size of 34 684, were spread across a deprived area of the city with a predominantly young, multicultural population, and a majority of the growing Somali community in Bristol. One of the practices hosted The Haven, the city's primary care centre for asylum seekers and refugees. A review of the case notes of patients recently diagnosed with vitamin D deficiency at these practices was undertaken to establish the size and nature of this emerging clinical need.

METHOD

The electronic GP records of all patients registered with these four practices were searched using Read Codes for 'vitamin D deficiency', 'nutritional deficiency', and 'nursing care injection'. From this search patients were identified who had been diagnosed with vitamin D deficiency, rickets, or osteomalacia between January 2003 (before the perceived increase in diagnoses) and September 2005.

Patient demographics, symptoms, investigations, and the number of patients who were taking daily vitamin D supplements at presentation, either prescribed or over the counter, were recorded. Only information contained in electronic or paper records was recorded and no patient contact was made.

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How this fits in

Certain groups of patients are at increased risk of vitamin D deficiency due to age, pregnancy, diet, skin colour, or reduced exposure to sunlight. The Somali community in particular are at high risk of vitamin D deficiency. Very few at-risk patients are taking supplements of vitamin D. Increased awareness of vitamin D deficiency and increased use of vitamin D supplements are required.

Anonymised data using a piloted data extraction form were collected and analysed using SPSS (version 12.0.1) software.

RESULTS

The study identified 299 cases of vitamin D deficiency. Thirty-one cases were in patients younger than 15 years of age with no difference in sex distribution. In contrast, 203 of 268 (75.7%) adult patients were female. Ethnic group was recorded for 206/299 patients. The number of patients who were black African was 182/206 (88.3%) and 134 of these were identified as being from Somalia. Only 14 patients (6.8%) came from the Asian community which forms a larger local ethnic group. Three patients were from white ethnic groups, and seven from other ethnic groups.

The most consistent symptom at presentation in adults was chronic bone pain (150 patients), typically in the lower limb (70 patients), or back (67 patients), but frequently in multiple sites. Widespread muscular pain was common in adults (105 patients), as was persistent fatigue (47 patients). Classic signs of proximal muscle weakness were only identified in seven records and gait change in four. Twenty-six patients had a recorded family history of vitamin D deficiency including 21 children. At presentation, seven children had bone or limb pain, seven had bow legs or swollen joints, one child presented with convulsions, and one with respiratory difficulty. Twelve children were asymptomatic and diagnosed by screening after the identification of vitamin D deficiency in another family member.

Confirmation of vitamin D deficiency was almost entirely by biochemical assay. Vitamin D level was

recorded in 272 (91.0%) patients (Table 1). Mean vitamin D level for women of childbearing age (18–44 years) was severely deficient at 5.9 mcg/l (standard deviation [SD] = 2.89). There was no increase in diagnoses during the winter and/or spring, when vitamin D levels are typically at their lowest. Three children were diagnosed by X-ray. Ten diagnoses appeared to be have been made solely based on clinical signs and symptoms.

Of 13 children aged 4 years and under, only one was taking vitamin D supplements at the time of presentation. Of the 22 pregnant or breastfeeding women one was taking supplements, while none of the 21 patients over the age of 65 years was. A total of 107 Somali women were considered to be at high risk due to their black skin and the likelihood of wearing clothes that fully covered the skin, but only one was taking supplements.

DISCUSSION

This is the largest case series of vitamin D deficiency in Somali/black African patients in the English language literature. Of particular concern is the predominance of severe deficiency in women of child-bearing age, as any infant born to these women will be at high risk of deficiency themselves, having been unable to complete their vitamin D stores during the last trimester of pregnancy.

This study was limited because GP records for patients whose vitamin D test produced results within the normal range were unable to be searched (although numbers were likely to be very small), and because no ethnic group was recorded for 93 patients. Information on risk factors for deficiency (such as length of time since patient left country of ethnic group origin, family history of deficiency, wearing clothes that fully cover the skin, or eating a restricted diet) were often absent from clinical records.

The Committee on Medical Aspects of Food⁹ advises daily supplements for children under 4 years of age, pregnant and breastfeeding women, and other persons at risk, such as adults over 65 years of age or those with reduced exposure to sunlight (for example, due to wearing of clothes that fully cover the skin, or institutionalisation). Despite this, very few of the patients identified were taking supplements at presentation. In the UK there is currently conflicting advice regarding vitamin D supplementation for pregnant and breastfeeding women.^{9,10} In addition, recommendations aimed at reducing the risk of skin cancer (for example, covering up with clothing and using sun screen) prevent opportunities for vitamin D generation. The withdrawal of mothers' and children's vitamin drops led to an inevitable fall in supplementation during

Table 1. Levels of vitamin D detected in 272 patients.

Age (years)	n	Vitamin D level (mcg/l), mean (SD)	Range
<15	23	8.3 (4.52)	2.5–17.9
15–64	228	6.8 (3.61)	1.0–19.0
>64	21	8.9 (4.27)	2.8–16.0
Females, 18–44 years	141	5.9 (2.89)	1.0–16.3

Reference range provided by local laboratories = 19–57 mcg/l. SD = standard deviation

pregnancy and the early years of childhood due to the lack of a cheap and easily available preparation that did not require prescription.

Vitamin D deficiency has re-emerged as a significant health issue in the UK, primarily in minority ethnic groups and the growing Somali community. Resolution of the confusion surrounding policy is required. The recent introduction of Healthy Start vitamins for women and children by the NHS¹¹ is most welcome and uptake should be encouraged. GPs should consider a diagnosis of vitamin D deficiency in any patient presenting with chronic musculoskeletal pain, especially if they are from black African ethnic groups.

Ethics committee

Not applicable

Competing interests

The authors have stated that there are none

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