*Lesson of the week*

# Musculoskeletal pain in female asylum seekers and hypovitaminosis $D_3$

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**Female asylum seekers with persistent non-specific musculoskeletal pain should be screened for hypovitaminosis $D_3$**

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Deficiency of vitamin D, which can lead to osteomalacia, is common in elderly patients in Western countries. However, it is still widely underdiagnosed in young immigrant women, even though the condition has been extensively reported in the immigrant Indo-Asian population in the United Kingdom since the 1960s.[1–4] A recent study reports an average 59 months before diagnosis was established,[5] and another study found a prevalence of 78% of hypovitaminosis $D_3$ (compared with 58% in controls) in an Indo-Asian population attending a UK rheumatology clinic.[6] When recognised, hypovitaminosis $D_3$ is easily treatable. A study on osteomalacic myopathy in veiled Arabic women in Denmark found that muscle strength returned to normal (except in maximal voluntary contraction) after six months' treatment.[7]

We expected to see this disease in female asylum seekers, especially in those from societies with different customs regarding exposure to sunlight and diet. We report 11 cases of symptomatic hypovitaminosis $D_3$ in female asylum seekers (table 1). We focus on the pathology encountered by the primary care doctors caring for these 11 patients, the length of time between the appearance of symptoms, and the establishment of the diagnosis of hypovitaminosis $D_3$ as well as the women's response to treatment by the improvement of a wide range of clinical symptoms—bone pain, muscular weakness, and fatigue.

## Case reports

The primary care doctors of an academic primary care centre serving a population of 100 000 provided the cases. The patients presented with minimal exposure to sunlight and a history of bone pain, proximal muscular weakness, change in gait, or fatigue. Treatment for most patients was two intramuscular injections of 18 750 nmol (300 000 IU) of cholecalciferol at monthly intervals and an ongoing course of oral calcium (1000 mg) and cholecalciferol (20 μg). All patients gave their informed consent.

We measured 25-hydroxycholecalciferol (the best laboratory indicator of vitamin D status) with a radioimmunoassay and an iodine-125 labelled tracer and calcium concentrations with spectrophotometry.[8] The reference ranges are 21-131 nmol/l and 2.15-2.55 mmol/l. The reference range for 25-hydroxycholecalciferol is from a healthy predominately white group of 20 men and 24 women from the midwest United States, aged between 23 and 67 years who volunteered during the month of October.

The first diagnoses, before the diagnoses of hypovitaminosis $D_3$ were made, were possible somatisation disorder in three patients, chronic back pain in four patients, and multiple unexplained somatic symptoms in three patients. Doctors considered and mentioned hypovitaminosis $D_3$ in only one case after being formerly told of the possible high prevalence of the disease and suspecting it on presentation.

The mean duration of symptoms before diagnosis was 38 months and 3 days (3.18 (standard deviation 4.15) years). Most complaints (with the exception of those of patient 11) were typical of hypovitaminosis $D_3$ from the outset. With treatment, most patients' symptoms disappeared within one to three months. One patient needed seven months of treatment.

At diagnosis, the mean serum 25-hydroxycholecalciferol concentration was 10.9 (3.8) nmol/l (table 2). These concentrations were during November to May, when the intensity of the sun is low at latitude 46.3°. For 10 patients, the mean concentration of blood calcium on diagnosis was 2.19 (0.09) mmol/l, and four patients had hypocalcaemia (< 2.15 mmol/l).

## Discussion

Asylum seekers are at risk because of the possible high prevalence of hypovitaminosis $D_3$ and difficulty in recognising the condition. The first diagnosis considered, in an often psychologically difficult context, is one suggestive either of somatoform disorder, as described in ICD-10 (international classification of diseases, 10th revision)[9] or somatisation. Patients with psychological disorders may report multiple unexplained somatic symptoms,[10] but pain due to hypovitaminosis $D_3$ is well defined. Generally, this pain is symmetrical and starts in the lower back then spreads to the pelvis, upper legs, and ribs. It is felt mainly in the bones; not in the joints. Patients may also have proximal muscle weakness.

Symptoms may last for some time before diagnosis, causing important psychosocial repercussions in an already vulnerable population. This confirms the poor knowledge of hypovitaminosis $D_3$ in doctors.[5]

With treatment, complete resolution is rapid—usually within three months. Doctors simultaneously treated patient 11 for a suspected venous insufficiency

**Table 1** Demographic and clinical data for 11 female asylum seekers with hypovitaminosis $D_3$

| Patient | Age | Origin | Time in Switzerland (years) | Veil | Complaints |
|---|---|---|---|---|---|
| 1 | 52 | Bosnia | 11 | Yes | Pain in ribs and neck then lower back and thighs |
| 2 | 57 | Afghanistan | 3 | Yes | Weakness and pain in thighs; occasional lower back pain |
| 3 | 27 | Somalia | 10 | Yes | Lower back pain; occasional mid-back and rib pain |
| 4 | 30 | Albania | 6 | No | Lower back and pelvic pain |
| 5 | 42 | Somalia | 4 | Yes | Back, knee, and shoulder pain |
| 6 | 43 | Bosnia | 4 | Yes | Back pain then diffuse bone pain |
| 7 | 45 | Somalia | 10 | Yes | Diffuse back and lower limb pain; fatigue |
| 8 | 63 | Somalia | 3.5 | Yes | Back pain with diffuse lower limb pain |
| 9 | 20 | Ethiopia | 6.5 | No | Lower back and lower limb pain; scapular pain |
| 10 | 51 | Bosnia | 1 | Yes | Lower limb pain |
| 11 | 62 | Bosnia | 6 | Yes | Lower right limb pain |

**Table 2** Clinical and laboratory data for 11 female asylum seekers with hypovitaminosis $D_3$

| Patient | Diagnosis considered | Duration of symptoms (months) | Time of response to treatment (months) | 25-hydroxycholecalciferol concentration (nmol/l) | Calcium concentration (mmol/l) |
|---|---|---|---|---|---|
| 1 | Somatoform disorder | 36 | 3 | 16.0 | 2.28 |
| 2 | Weakness of unknown origin | 6 | 3 | 7.7 | 2.08 |
| 3 | Lower back pain with functional component | 60 | 1 | 10.5 | * |
| 4 | Possible somatoform disorder | 24 | 3 | 11.5 | 2.34 |
| 5 | Knees: arthritis; no other formal diagnosis | 36 | 2 | 13.5 | 2.23 |
| 6 | Back pain then no formal diagnosis | 27 | 2 | 9.2 | 2.05 |
| 7 | Somatoform disorder | 12 | 1 | 4.5 | 2.11 |
| 8 | Chronic back pain | 180 | 2 | 10.7 | 2.19 |
| 9 | Mechanical back pain | 24 | 7 | 6.2 | 2.14 |
| 10 | Restless legs; polyneuropathy; unexplained symptoms | 12 | 2 | 13.7 | 2.24 |
| 11 | Atypical sciatalgia; venous insufficiency; osteomalacia | 2 | 2 | 16.2 | 2.24 |

*Calcium concentration was not measured.

(varicose veins bilaterally and slight right foot oedema); the resolution of symptoms was due to either the combination of vitamin D and calcium or the treatment for venous insufficiency (support stockings, diosmin, and hesperidin tablets and heparin-allantoin-dexpanthenol gel) or both. The literature suggests that the resolution of symptoms associated with hypovitaminosis $D_3$ typically occurs between three and six months: three months for symptoms due to the osteopathy[5] and six months for the myopathy.[7]

The patients in our cases had low concentrations of 25-hydroxycholecalciferol. Even though the reference range for serum 25-hydroxycholecalciferol is difficult to determine, because it varies with season and geography, concentrations below 20 nmol/l indicate severe deficiency.[11 12] Concentrations greater than 50 nmol/l prevent secondary hyperparathyroidism.[13] Other authors have proposed that the cut-off concentration is 78 nmol/l,[14] and for elderly people it may be greater than 100 nmol/l.[15–17] Concentrations of at least 75 nmol/l are necessary to maintain cellular function.[18] Achieving these concentrations requires the elimination of some risk factors, such as reduced exposure to sunlight (covering arms and legs while outdoors, winter season, and housebound status) and a strict vegetarian diet, which are the most reliable predictors of hypovitaminosis $D_3$.[19–21] Nevertheless, large educational campaigns within an Asian community resulted in an improvement in vitamin D deficiency among only the children.[22] Routine vitamin D supplementation seems to be beneficial for populations at risk.[8 12] Various authors recommend a daily intake of 800-1000 IU (50-62.5 nmol; 20-25 µg) for benefits in health.[12 17]

A recent study found that 28% of patients (immigrants and non-immigrants) presenting with persistent non-specific musculoskeletal pain in a community health centre in Minnesota had severe vitamin D deficiency, emphasising the importance of this disorder.[23] Hypovitaminosis $D_3$ in female asylum seekers may remain undiagnosed with a prolonged duration of chronic symptoms and the associated pitfall of potential misdiagnosis of the symptoms as somatisation. Treatment is beneficial, with a rapid resolution of symptoms. Doctors should be aware of the importance of the disease and the impact of rapid diagnosis and treatment. Future research should consider routine supplementation in this population.

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1 Ford JA, Colhoun EM, McIntosh WB, Dunnigan MG. Rickets and osteomalacia in the Glasgow Pakistani community, 1961-71. *BMJ* 1972;2: 677-80.
2 Holmes AM, Enoch BA, Taylor JL, Jones ME. Occult rickets and osteomalacia among the Asian immigrant population. *Q J Med* 1973;165:125-49.
3 Preece MA, McIntosh WB, Tomlinson S, Ford JA, Dunnigan MG, O'Riordan JL. Vitamin-D deficiency among Asian immigrants to Britain. *Lancet* 1973;i:907-10.
4 Stamp TC, Walker PG, Perry W, Jenkins MV. Nutritional osteomalacia and late rickets in Greater London, 1974-1979: clinical and metabolic studies in 45 patients. *Clin Endocrinol Metab* 1980;9:81-105.
5 Nellen JFJB, Smulders YM, Frissen PHJ, Slaats EH, Silberbusch J. Hypovitaminosis D in immigrant women: slow to be diagnosed. *BMJ* 1996;312:570-2.
6 Serhan E, Newton P, Ali HA, Walford S, Singh BM. Prevalence of hypovitaminosis D in Indo-Asian patients attending a rheumatology clinic. *Bone* 1999;25:609-11.
7 Glerup H, Mikkelsen K, Poulsen L, Hass E, Overbeck S, Andersen H, et al. Hypovitaminosis D myopathy without biochemical signs of osteomalacic bone involvement. *Calcif Tissue Int* 2000;66:419-24.
8 Utiger RD. The need for more vitamin D. *N Engl J Med* 1998;338:828-9.
9 World Health Organization. The ICD-10 classification of mental and behavioral disorders: clinical descriptions and diagnostic guidelines. Geneva: WHO, 1992.
10 Simon GE, VonKorff M, Piccinelli M, Fullerton C, Ormel J. An international study of the relation between somatic symptoms and depression. *N Engl J Med* 1999;341:1329-35.
11 McKenna MJ. Differences in vitamin D status between countries in young adults and the elderly. *Am J Med* 1992;93:69-77.
12 Compston JE. Vitamin D deficiency: time for action. *BMJ* 1998;317:1446-7.
13 Malabanan A, Veronikis IE, Holick MF. Redefining vitamin D insufficiency. *Lancet* 1998;351:805-6.
14 Chapuy MC, Preziosi P, Maamer M, Arnaud S, Galan P, Hercberg S, et al. Prevalence of vitamin D insufficiency in an adult normal population. *Osteoporos Int* 1997;7:439-43.
15 Chapuy MC, Arlot ME, Duboeuf F, Brun J, Crouzet B, Arnaud S, et al. Vitamin D3 and calcium to prevent hip fractures in elderly women. *N Engl J Med* 1992;327:1637-42.
16 Dawson-Hughes B, Harris SS, Krall EA, Dallal GE. Effect of calcium and vitamin D supplementation on bone density in men and women 65 years of age or older. *N Engl J Med* 1997;337:670-6.
17 Vieth R. Vitamin D supplementation, 25-hydroxyvitamin D concentrations, and safety. *Am J Clin Nutr* 1999;69:842-56.
18 Holick MF. Vitamin D: the underappreciated D-lightful hormone that is important for skeletal and cellular health. *Curr Opinion Endocrinol Diabetes* 2002;9:87-98.
19 Thomas MK, Lloyd-Jones DM, Thadhani RI, Shaw AC, Deraska DJ, Kitch BT, et al. Hypovitaminosis D in medical inpatients. *N Engl J Med* 1998;338:777-83.
20 Finch PJ, Ang L, Eastwood JB, Maxwell JD. Clinical and histological spectrum of osteomalacia among Asians in South London. *Q J Med* 1992;83:439-48.
21 Smith R. Asian rickets and osteomalacia. *Q J Med* 1990;6:899-901.
22 Stephens WP, Klimiuk PS, Warrington S, Taylor JL, Berry JL, Mawer EB. Observations on the natural history of vitamin D deficiency amongst Asian immigrants. *Q J Med* 1982;202:171-88.
23 Plotnikoff GA, Quigley JM. Prevalence of severe hypovitaminosis D in patients with persistent, nonspecific musculoskeletal pain. *Mayo Clin Proc* 2003;78:1463-70.

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