PRESENTATION OF OSTEOMALACIA IN KOHISTANI WOMEN

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Background: Osteomalacia is a common diagnosis in the Kohistani women presenting with aches and pains. This study was conducted to assess calcium and Phosphate levels in Kohistani women with osteomalacia. **Methods:** 50 diagnosed cases of Osteomalacia selected from amongst the women presenting with body aches were included in the study. History regarding age, marital status, parity, dietary habits, socioeconomic status etc was taken. **Results:** The median age was 23 years. 74% were married. Most of the women had 5 children (mode). Nine (18%) patients had hypocalcaemia, 10 (20%) had hypophoshatemia. Alkaline phosphatase was elevated in 13 patients (26%). Six (12%) patients were pregnant at the time. 74 % of patients belonged to the poor class. 70% of the patients drank less than 1 cup of milk per day. Body aches (100%), waddling gait (14%), proximal myopathy (12%), bone tenderness (6%) and carpopedal spasm (8%). **Conclusions:** We therefore conclude that in comparison with other parts of the world where individual risk factors cause osteomalacia, Kohistani population has a higher frequency of osteomalacia due to aggregation of three major factors namely lack of sunlight due to geographical location, excessive clothing blocking available sunlight and nutritional deficiency.

Keywords: Osteomalacia, Body aches, Serum Calcium, Serum Phosphate, Alkaline Phosphate

INTRODUCTION

Osteomalacia is a metabolic bone disease caused by deficiency of vitamin D or its active metabolites. Reasons for the deficiency are inadequate dietary intake of Calcium and Vitamin D[1], malabsorbtive conditions, inadequate exposure to sunlight[2] and renal disease. Low intake of available calcium and lack or inefficient supplements are suggested to be the main factors in causing the low state of calcium.[3]

The disorder is significantly worse in winter than in summer suggesting that insufficient exposure to sunlight is a contributory factor.[4] Because poor sunlight exposure is one of the most common causes of osteomalacia, the disease seems to be rare in countries with adequate sunlight.[5]

The disease is common in females specially of the old age. An interesting study of Iliac bone biopsies of 80 elderly white South African ladies with femoral neck fractures revealed histological features of osteomalacia in 11.25% of cases.[4]

Osteomalacia is a condition whose presentation may be subtle in adults. Symptoms include diffuse skeletal pains. Signs are bone tenderness and proximal myopathy. Pain and weakness in the hips may produce the typical waddling gait. The disease if not correctly diagnosed will lead to unnecessary prescriptions of NSAIDs. The minimum daily requirement for vitamin D is 2.5 mcg (100 IU) daily.

This study was undertaken to assess the etiology, presenting signs and symptoms and laboratory findings of Osteomalacia in Kohistani women so as to understand the magnitude of the problem and increase awareness about this common and easily treatable disease which is no more found in the developed world.

MATERIAL AND METHODS

This study was carried out at Ayub Teaching Hospital, Abbottabad with collaboration between medicine and orthopaedics units. Fifty Kohistani women of reproductive age group reporting with body aches as their primary symptom and diagnosed as osteomalacia were included in this study.

A proforma was used to collect data about each individual. Age, marital status, parity, pregnancy, socioeconomic status, area of residence, dietary/milk consumption per day, exposure to sunlight were the main variables of study.

Blood samples were collected and tested for Calcium, Phosphate, Albumin and Alkaline Phosphatase. As serum calcium is largely bound to albumin the corrected calcium levels were taken as follows:

Corrected Ca = Serum Ca in mgs/dl + {0.8 x (4.0 – Albumin gm/dl)}

Osteomalacia was diagnosed on the basis of a history of bone aches or pains, muscle weakness, low or low normal serum calcium and urinary calcium, decreased concentrations of serum inorganic phosphorus and 25-hydroxyvitamin D and increased serum intact PTH and alkaline phosphatase levels.

RESULTS

The median age was 23 years. 74% were married. Most of the women had 5 children (mode). Nine (18%) patients had hypocalcaemia, 10 (20%) had hypophoshatemia. Alkaline phosphatase was elevated in 13 patients (26%). Six (12%) patients were pregnant at the time. 74 % of patients belonged to the poor class. 70% of the patients drank less than 1 cup of milk per day.

Table-1: Clinical features of osteomalacia in the group studied (n=50)

Clinical feature	Subjects (%)
Body aches	50 (100)
Waddling gait	7 (14)
Demonstrable proximal myopathy	6 (12)
Bone tenderness	3 (6)
History of Carpopedal spasms	4 (8)

Table-2: Calcium and Phosphate levels in the group studied (n=50)

	Subnormal	Borderline	Normal (>9mg/dl)

	(<8.5 mg/dl)	(8.5-9 mg/dl)	
Calcium	9 (18%)	12 (24%)	29 (58%)
Phosphate	10 (20%)	13 (26%)	27 (54%)

DISCUSSION

A study conducted in Karachi in 1976 surveyed 206 healthy Pakistani women and 252 pregnant Pakistani women near term attending the antenatal clinic. This study reported 12-16% of healthy women and 33% of pregnant women to have biochemical abnormalities of serum calcium, phosphorus, and alkaline phosphatase, that were corrected with subsequent administration of vitamin D. This study suggested that absence of clinical disease was due to adequate supplementation received through the ultraviolet irradiation of the skin.[6] This study was carried out in a port city at sea level, where sunlight is no problem, and the women do not use excessive clothing. Our study population belonged to an area where sunlight is scarce and women are used to excessive clothing.

Kohistan is a district of Hazara division of North West Frontier Province. It is a mountain area where sunlight is available for a very short time everyday, if there is no cloud cover. The ladies in this area use excessive clothing made up of layers after layer of thick cloth. It is possible that excessive clothing may be a risk factor for osteomalacia in young to middle-aged and otherwise healthy women as was reported by Gulu et al from Turkey.[5]

Gulu et al reported nine Turkish female patients with osteomalacia with ages between 21 and 50 years. Radiographically, pseudo-fractures were present in seven of the patients. The patients' symptoms and signs were relieved with the treatment with vitamin D analogues and calcium. They reported that hypovitaminosis D may be caused by excessive clothing in the outdoors due to sociocultural and religious reasons.[5]

A study from Israel retrospectively surveyed hospital admissions over 10 years period and reported nutritional osteomalacia in 20 patients all of whom were Bedouin women. All of them suffered from bone pain, proximal muscle weakness and fixed skeletal deformities. Mean serum alkaline phosphatase levels were raised. Mean 25-hydroxyvitamin D and 1,25-dihydroxyvitamin D levels in 60 % cases were below normal.[7]

An Egyptian study of 230 pregnant women of low socio-economic group suggested association of a low nutritional status with osteomalacia denoting an impaired calcium state and defective bone mineralization.[3] This can be true for this region also, where majority of the population lives below poverty line. Women are most exposed to nutritional deficiency as males are given priority, being a male dominated and male centered society.[8,9]

It appears that in our population malnutrition due to poverty is the predominant cause. Another possibility that might be operative in Kohistani women is the traditional black body covering (Chaddar) that they wear.

We therefore conclude that in comparison with the above studies where individual possible risk factors were causing osteomalacia, Kohistani population has a higher frequency of osteomalacia due to aggregation of three major factors namely lack of sunlight due to geographical location, excessive clothing and nutritional deficiency.

It is the need of the hour to educate our medical students, the nurses and the paramedics about the dietary aspects of disease, supplementation of essential nutrients in the vulnerable population groups like the elderly, young children, pregnant women and women of childbearing age. These simple measures will considerably reduce morbidity and improve the quality of life to some extent in this impoverished population.

REFERENCES

1. Binet A; Kooh SW. Persistence of Vitamin D-deficiency rickets in Toronto in the 1990s. Can J Public Health. 1996 Jul-Aug; 87 (4): 227-30.

2. Woitge HW; Scheidt Nave C; Kissling C et al. Seasonal variation of biochemical indexes of bone turnover. J Clin Endocrinol Metab. 1998 Jan; 83 (1): 68-75.

3. Abd-el-Fattah M, Gabrial GN, Shalaby SM, Morcos SR. An epidemiological and biochemical study on osteomalacia among pregnant women in Egypt. Z Ernahrungswiss. 1978 Sep;17(3):140-4.

4. Schnitzler CM, Solomon L. Osteomalacia in elderly White South African women with fractures of the femoral neck. S Afr Med J 1983;64(14):527-30.

5. Gullu S, Erdogan MF, Uysal AR, Baskal N, Kamel AN, Erdogan G.A potential risk for osteomalacia due to sociocultural lifestyle in Turkish women. Endocr J 1998 Oct;45(5):675-8.

6. Rab SM. Occult osteomalacia amongst healthy and pregnant women in Pakistan. Lancet. 1976 Dec 4;2(7997):1211-3.

7. Lowenthal MN, Shany S. Osteomalacia in Bedouin women of the Negev. Isr J Med Sci. 1994 Jul;30(7):520-3.

8. Thomas MK; Lloyd Jones DM; Thadani RI; Shaw AC. Hypovitaminosis D in medical inpatients. N Engl J Med. 1998 Mar 19; 338 (12): 777-83.

9. Hoshino H; Kushida k; Takahashi M; Kawana K; Denda M; Yamazaki K; Inoue T. Characteristics of Biochemical Markers in patients with metabolic bone disorders. Endocr Res. 1998 Feb: 24 (1): 55-64.

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