

# **Adolescent Osteomalacia as a Cause of Low Back Pain In Young Female**

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## **Abstract**

10 young female patients presenting with low back pain and generalised bodyache were considered for the present study. They were examined physically and investigated biochemically and radiologically. All the cases were diagnosed as osteomalacia. They were treated with single dose of parenteral Vit.D and oral calcium supplementation. All of them improved clinically, biochemically and radiologically within two months. Some of them had residual pain at one month. Oral supplementation of calcium was continued in those cases for another one month. In addition advice regarding proper diet and importance of exposure of sunlight was given to every patient to prevent recurrence of osteomalacia.

**Key Words :** Osteomalacia - Adolescent - Female - Drug Treatment

## **Introduction**

Low back pain is a common complain of female adolescent patients attending Physical Medicine and Rehabilitation Department. History of trauma is usually lacking. Some of the patients have additional symptoms of bodyache, gait disturbances and difficulty in standing from squatting position. On examination, bony and muscle tenderness is usually found in addition to painful spinal movements.

The present study was conducted to know cause of such presentation and the treatment procedure to be used for the benefit of such patients.

## **Materials and Methods**

The study was conducted in the department of Physical Medicine and Rehabilitation of Medical College, Kolkata. A total of 10 adolescent

females having long duration low back pain as the main complain were considered for the study. Some of the members also had additional symptoms like bodyache and gait abnormality. In each patient a detailed history was taken along with clinical, biochemical and radiological examinations to ascertain the cause. In addition routine blood and urine examinations were done in every case. All the patients were diagnosed as having osteomalacia.

They were treated with single dose of 6 lakh units IM Vit.D and oral calcium 500mg twice daily. They were evaluated periodically at one month and at two month after the first visit. In patients with residual symptoms at one month, oral calcium supplementation was continued for another one month. Each patient was advised regarding proper diet and sunlight exposure.

## **Observations and Results**

All cases in the above study were below 17 years, mostly between 14-16 years. All the cases were female. It is interesting to note that all the

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**Table 1 :** Showing characteristics of patients.

<i>Sl. No.</i>	<i>Name of the Patient</i>	<i>Age in Years</i>	<i>Sex</i>	<i>Marital Status</i>	<i>Religion</i>	<i>Duration of Illness</i>
1.	Reshma	14	Female	Unmarried	Muslim	5 months
2.	Sahina Parveen	14	Female	Unmarried	Muslim	6 months
3.	Punam Ikbal	16	Female	Unmarried	Muslim	7 months
4.	Susma Ikbal	17	Female	Unmarried	Muslim	2 months
5.	Tarannu Begam	12	Female	Unmarried	Muslim	2 months
6.	Sabnam Parveen	12	Female	Unmarried	Muslim	6 months
7.	Afsana Khatoon	14	Female	Unmarried	Muslim	1 year
8.	Ruksana Khatoon	14	Female	Unmarried	Muslim	6 months
9.	Rahina	13	Female	Unmarried	Muslim	4 months
10.	Nurjaha	14	Female	Unmarried	Muslim	9 months

**Table 2 :** Showing financial and social distribution of the patients.

<i>Total family members of the patient</i>			<i>Rooms shared by the family members of the patient</i>		<i>Total income of the family of the patient per day in rupees</i>		
<5	5-10	>10	1 room	2 rooms	< 50	50-100	>100
0 patient	10 patients (100%)	0 patient	7 patients (70%)	3 patients (30%)	2 patients (20%)	5 patients (50%)	3 patients (30%)

cases were of Muslim community. All of the patients were unmarried (Table 1)

All the subjects of the study were members of large family living in one or two crowded rooms and consuming nutritionally deficient diet due to meagre family income (Table 2).

Only one patient had been consuming anticonvulsant for control of epilepsy for last 7 years.

Initially serum alkaline phosphatase was found to be high, whereas serum calcium and phosphate were found to be below normal in all cases. As a result of treatment patients improved physically and biochemically early but radiological improvement took some time. But after two months of treatment, all the patients improved physically, biochemically and radiologically

(Table 3).

Radiograph showed looser zone especially in pelvis (Fig. 1) which disappeared following treatment (Fig. 2).

**Fig. 1 :** Photograph of Pelvis showing looser zone in the right superior pubic ramus.



**Table 3 :**

Sl. No.	Radiological Assessment		Serum Calcium Level (mg/dl)		Serum Phosphate Level (mg/dl)		Serum Alkaline Phosphatase Level (U/L)	
	At Entry (Looser Zone- present or not)	At 2 month (improvement noticed or not)	At Entry	At 2 Month	At Entry	At 2 Month	At Entry	At 2 Month
1.	Present	Yes	7.9	9.4	2	2.8	550	306
2.	Present	Yes	8	10	2.3	3.8	350	295
3.	Present	Yes	8.1	9.3	1.8	3.9	510	300
4.	Present	Yes	7.9	9.5	2.1	2.9	720	309
5.	Present	Yes	8.2	10.1	2.2	3.2	375	260
6.	Present	Yes	8	9.4	1.9	3.8	500	290
7.	Present	Yes	8.3	9.5	2.1	4	430	301
8.	Present	Yes	8.5	9.8	1.8	2.8	480	308
9.	Present	Yes	7.8	9.6	2	3.1	400	270
10.	Present	Yes	8.4	9.7	1.9	3.5	410	280

**Fig. 2 :Photograph of Pelvis showing looser zone in the right superior pubic ramus.**



## Discussion

Low back pain in an adolescent female is a common presentation in physiatric practice. If low back pain is present for a long time especially in a female of low socioeconomic status and they fail to improve with NSAID and exercise, osteomalacia should be thought of as a possibility. Osteomalacia and Rickets are disorders in which mineralisation of the organic matrix of the skeletal is defective.

In Rickets growing skeletal is involved. The term Osteomalacia is reserved for disorders in adults in whom epiphysial growth plate is closed<sup>1</sup>.

Aetiologies of osteomalacia are (1) Dietary deficiency of Vit. D. (2) Inadequate exposure to sunlight (like women in purdah). (3) Chronic renal diseases. (4) Chronic intake of antiepileptic drugs<sup>2</sup>. Adolescent period starts from the onset of puberty and ends till sexual maturity is complete. It can be divided into prepubescent, pubescent and post pubescent period. It extends from 10 to 18 years in male and 12 to 20 years in female<sup>3</sup>. None of the patients in the present study used purdah in contrast to the study of EL-Sonbaty-MR et.al.May 1994<sup>4</sup>. One of the patients used anticonvalsant for 7 years, which may be cause of Osteomalacia<sup>2</sup>. Biochemical examinations showed increased alkaline phosphatase and reduced levels of serum calcium and phosphate that is in corroboration with the study of Oliveri-B et.al.1999<sup>5</sup>. Less exposure to sunlight can cause Rickets and Osteomalacia<sup>6</sup>. All the members were found to be residing in over-crowded slums of Kolkata getting less sunlight exposure that contributed to causation of

osteomalacia. In addition all the patients were found to depend on meagre family income, which is the cause of nutritional deficiency leading to osteomalacia<sup>2</sup>.

It is interesting to note that all the cases in the present study were muslim. That does not mean that osteomalacia does occur in young muslim female only. Patients in the present study came from slums surrounding medical college, Kolkata where maximum number of peoples are muslim and they live in underexposed overcrowded rooms and they do not get even minimum nutritious food required to prevent osteomalacia (Table 2). Again female predominance also proves our social injustice to female. Females get little share of the food available in the family, as male member are privileged to get maximum amount of food. Thus socio-economic background and not religion is important for causation of osteomalacia.

Though 400-1000 I.U vit.D per day and calcium supplementation is effective in osteomalacia<sup>7</sup>, single parenteral dose of 6 lakhs units of vitamin D was administered in this study considering lower socio-economic status of the patients. In addition, importance of dietary advice and exposure to sunlight was not ignored, as they would prevent recurrence of osteomalacia. Though bed rest along with plenty of milk and sunlight exposure may have definite role in treatment, rigid bed rest was never advised considering socio-economic background of the patients as they were bound to do normal household activities. But they were advised to avoid vigorous exercises. Serum vit.D estimation could not be done due to lack of facilities.

All the patients improved clinically, biochemically and radiologically within 2 months of initiation of treatment. In all cases improvement of general health and mode of the patients were also perceived. With oral vit.D, radiological evidence of healing is first noted within weeks<sup>8</sup>. The process of healing in the present study was probably hastened due to single high dose of parenteral dose of vit.D instead of daily low dose of oral vit. D.

## Conclusion

From the present study it is found that in case of adolescent female of lower socio-economic status who are underexposed to sunlight and are presented with prolonged low back pain with or without symptoms of myalgia and gait abnormality, osteomalacia should be considered as one possibility. Parenteral single dose of vit.D and oral supplementation of calcium can give good result in established cases of osteomalacia.

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