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Hypophosphatemic osteomalacia in neck femur fracture: Case series

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Abstract
Background: In adult acquired hypophosphatemic osteomalacia is generally associated with Biochemical abnormalities.
Aims and Objective: To study Hypophosphatemic Osteomalacia in Neck femur fracture : A case series of 10 patients.
Methodology: This was a cross-sectional study carried out in the department of Orthopedics from Aug 2015 to August 2016 in the patients who complained of Bilateral Hip (Groin) Pain and inability to walk were; Clinical, Radiological and all laboratory investigations whenever required were done and patients which were having final diagnosis of hypophosphatemic Osteomalacia in Neck femur fracture were included into the study during the study period.
All details of the patients like age, sex and clinical features were noted. The data analysis was done by Excel software for windows 10.
Result: In our study we have seen that the majority of the patients were in the age group of 60-70(40%), followed by 50-60 (20%), >70 (20%), 40-50 (10%), 30-40 (10%).
The majority of the patients were Female (60%) and Males were 40%. The most common clinical features were Bilateral Hip (Groin) Pain (100%), Inability to walk (90%), Bilateral femur fracture (X-ray) in 30%, Unilateral femur fracture (X-ray) in that Left was predominant i.e. 50% and Right were 20%. In the laboratory findings the all parameters were apparently normal except high Serum ALP level, low Serum Phosphorus level. Treatment and Outcome: Patient were treated conservatively they advised bed rest and supplementation of Tab. Endocal Forte OD, Protocol Supplement 2tsp with milk BD Adophos Sachet in ½ glass of Water QID, Tab. Rocaltrol (2.5) QID, average Patient were walking without support in an average 2 weeks, Pain decreased and also there is improvement of haematological parameter , X-ray shows signs of healing fracture.
Conclusion: Hypophosphatemic Osteomalacia is commonly missed due to nonspecific signs and symptoms, but thorough investigation of blood and radiograph required for non-traumatic hip pain. This is rare condition needs high index of suspicion. This is totally curable by conservative Methods.

Keywords: hypophosphatemic osteomalacia, neck femur fracture, ALP

Introduction

In adult acquired hypophosphatemic osteomalaciagenerally associated with Biochemical abnormalities [1-3], but these are very rarely reported in the literature which may show bone features with quantitative bone histomorphometric analysis [3-6]. Patients with tumor-induced osteomalacia experience bone pain, fractures and muscle weakness which is now known to be due to fibroblast growth factor 23 (FGF23) secreted by endocrine tumors [2]. Tumor-induced osteomalacia can be present in patients with prostate cancer, oat cell cancer, hematologic malignancies, neurofibromatosis and other conditions. In the series reported by Chong *et al.* [2] tumors were identified in 61% of the patients. Tumors in tumor-induced osteomalacia may often be small, and located in obscure areas [1]. Even with current diagnostic techniques, these tumors may remain difficult to locate in some patients [7]. In their review of tumor-induced osteomalacia summarize the characteristics of hypophosphatemic (from renal phosphate wasting) and inappropriately normal or low 1,25-dihydroxyvitamin D levels seen in these patients. Patients may remain undiagnosed for long periods of their life [2]. Multiple fractures can be present. In our case we have noted case series of the 10 patients with hypophosphatemic Osteomalacia and their clinical features and treatment and outcome

Methodology

This was a cross-sectional study carried out in the department of Orthopedics from Aug 2015 to August 2016 in the patients who were complained of Bilateral Hip (Groin) Pain and inability to walk were thoroughly evaluated; clinically Radiological and all laboratory investigations whenever required so the which was having final diagnosis of hypophosphatemic Osteomalacia in Neck femur fracture were included into the study during the study period. All details of the patients like age, sex and clinical features if any were noted. The data analysis was done by Excel software for windows 10.

Result

Table 1: Distribution of the patients as per the age

Age	No.	Percentage (%)
30-40	1	10
40-50	1	10
50-60	2	20
60-70	4	40
>70	2	20
Total	10	100

The majority of the patients were in the age group of 60-70 were 40% followed by 50-60 Were 20%, >70 were 20%, 40-50 were 10%, 30-40 were 10%.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Male	4	40
Female	6	60
Total	10	100

The majority of the patients were Female i.e. 60% and Males were 40%.

Table 3: Distribution of the patients as per the clinical features

Clinical features	No.	Percentage (%)
Bilateral Hip (Groin) Pain	10	100
Inability to walk	9	90
Bilateral femur fracture (X-ray)	3	30
Unilateral femur fracture (X-ray)		
Left	5	50
Right	2	20

The most common clinical features were Bilateral Hip (Groin) Pain in100%, Inability to walk in 90%, Bilateral femur fracture (X-ray) in 30%, Unilateral femur fracture (X-ray) in that Left was predominant i.e. 50% and Right were 20%.

Table 4: Distribution of the patients as per the Investigations

Investigation	AUG 2015 (n=10)	JAN 2016 (n=10)	Normal Value
Hb	12.3g/dl	13.9g/dl	13.0-17.0g/dl
Tlc	6300/cumm	6800/cumm	4000-10000
Platelet	1,59,000/cumm	1,77,000/cumm	1,50,000-4,50,000
Serum Alp	317IU/L	204IU/L	25-90IU/L
Serum Calcium		8.9mg/dl	8.7-11mg/dl
Serum Phosphorus	2.01mg/dl	2.05mg/dl	3.5-5.5mg/dl
Serum 25-Oh-Vitamin D	35.5 ng/mL	79.1ng/mL	0-5 ng/mL
Blood Urea	23mg/dl	26mg/dl	10-45
Serum Creatinine	0.88mg/dl	1.52mg/dl	0.6-1.2mg/dl
Hiv / Hbsag	Neg./Neg.	-	
Fibroblast Growth Factor 23(Fgf-23)	109.9 RU/ml	-	0-150 RU/ml

In the laboratory findings the all parameters were apparently normal except highSerum ALP level, low Serum Phosphorus level.

Treatment and Outcome: Patient were treated conservatively they advised bed rest and supplementation of Tab. Endocal Forte OD, Protocol Supplement 2tsp with milk BD Adophos Sachet in ½ glass of Water QID, Tab. Rocaltrol (2.5) QID, average Patient were walking without support in an average 2 weeks, Pain decreased and also there is improvement of haematological parameter , X-ray shows signs of healing fracture

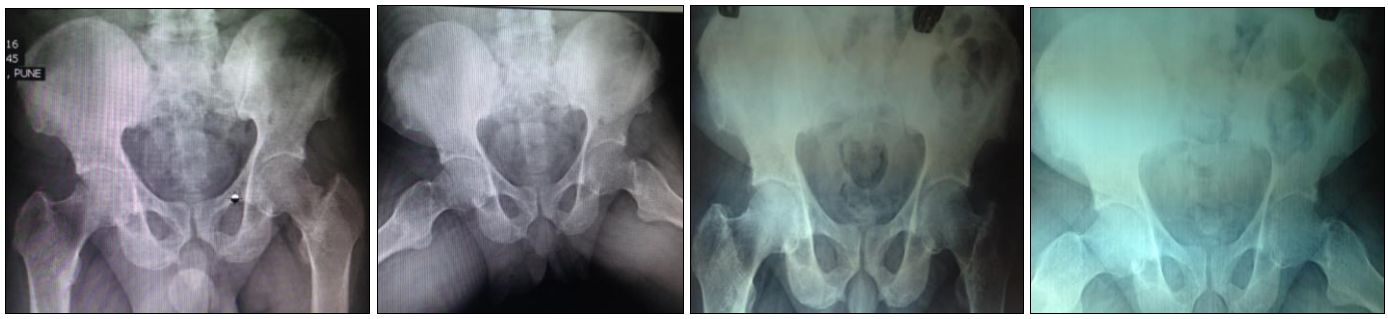

Fig 1: Showing signs of fracture healing

Discussion

Hypophosphatemic osteomalacia (HO) is an uncommon metabolic disease characterized by low concentrations of serum phosphate levels, which leads to reduced mineralization of the bone matrix [8]. It may affect individuals of all ages and either gender. Typically, HO is either inherited [9], a result of tumor-induced osteomalacia (TIO) [11], drug-induced [10] or a symptom of chronic kidney disease [12]. Patients with inherited or TIO have been widely reported on by endocrinology or oncology specialists, however HO is often misdiagnosed in clinical practice as ankylosing spondylitis (AS), chronic arthritis, lumbar disc disease,

osteoporosis and somatoform disorder, as it typically presents with the same signs and symptoms of these rheumatologic diseases, including bone pains, thoracic or back pain, muscle weakness, proximal myopathy and arthralgia [14]. Diagnosis of HO remains a challenge to rheumatologists and physicians due to its low prevalence and nonspecific manifestations. Screening blood tests for electrolytes, particularly serum phosphate and bone mineral density (BMD) is basic clue for diagnosis. Screening for hidden tumors, which are classified as phosphaturic mesenchymal or phosphaturic mesenchymal tumor mixed connective tissue variants is important for patients with HO without an obvious etiology or history. The majority of the tumors are of bone or soft tissue origin and positron emission tomography (PET)/computed tomography (CT) scans may be used to identify them [11]. The prognosis of the disease depends on the etiology. The treatment or removal of secondary etiologies, including drugs and tumors has been reported to be particularly effective at improving the condition. It is necessary to supply basic supplementation to all patients with sufficient oral phosphate, elemental calcium and active vitamin D [13].

In our study we have seenThe majority of the patients were in the age group of 60-70 were 40% followed by 50-60Were 20%, >70 were 20%, 40-50 were 10%, 30-40 were 10%.

The majority of the patients were Female i.e. 60% and Males were 40%. The most common clinical features were Bilateral Hip (Groin) Pain in100%, Inability to walk in 90%, Bilateral femur fracture (X-ray) in 30%, Unilateral femur fracture (X-ray) in that Left was predominant i.e. 50% and Right were 20%. In the laboratory findings the all parameters were apparently normal except highSerum ALP level , low Serum Phosphorus level.

Treatment and Outcome : Patient were treated conservatively they advised bed rest and supplementation of Tab. Endocal Forte OD, Protocol Supplement 2tsp with milk BD Adophos Sachet in ½ glass of Water QID, Tab. Rocaltrol (2.5) QID, average Patient were walking without support in an average 2 weeks, Pain decreased and also there is improvement of haematological parameter , X-ray shows signs of healing fracture These findings are similar to LING LI [14] *et al* they found Clinical data was obtained from 9 patients with acquired HO, initially misdiagnosed as mimic rheumatologic diseases. The data were retrospectively analyzed and a literature review was performed. The etiology of the cases was as follows: Adefovir dipivoxil-induced Fanconi syndrome was present in 6 of the cases, 2 were tumors and 1 case was chronic nephropathy. The chief complaint was thoracic or back pain and arthralgia, followed by progressive muscle weakness and dramatic movement limitation. All patients were transferred to 3-6 hospitals for extended periods due to misdiagnosis with conditions such as ankylosing spondylitis, chronic arthritis, lumbar disc disease, osteoporosis and somatoform disorder. Hypophosphatemia was observed in the patients and bone scans revealed diffusely decreased tracer uptake, with multiple hot spots of fractured sites and involved joints. Furthermore, patients' bone density was markedly low compared with the normal range for their age and sex. In the present study, 6 of the patients recovered when adefovir dipivoxil was stopped. In 1 case, hypophosphatemia was ameliorated following tumor resection. The remaining patients, 1 with sub-skull tumor and 1 with chronic kidney disease, had poor prognoses due to incurable diseases. In conclusion, diagnosing HO is challenging for rheumatologists and physicians. Basic examinations of electrolyte balance and bone mineral density should be performed, as should tumor screening and a careful collection of patient medical history and drugs in young patients with unexplained thoracic or back pain and muscle weakness. Removing any secondary etiology, such as drugs may dramatically improve the patients clinical manifestations and result in an improved prognosis

Conclusion

Hypophosphatemic Osteomalacia is commonly missed due to nonspecific signs and symptoms, but thorough investigation of blood and radiograph required for non-traumatic hip pain. This is rare condition needs high index of suspicion. This is totally curable by conservative methods.

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