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Research Article

**STUDY TO KNOW VITAMIN D AND CALCIUM
SUPPLEMENTS ROLE IN REUNION OF FRACTURES**¹Dr. Saba Mehreen, ²Dr. Asma Razzaq, ³Zunaira Siddiqui¹Medical Officer Lahore General Hospital²DHQ Hospital Faisalabad³DHQ Teaching Hospital, Dera Ghazi Khan**Abstract:**

Objective: To investigate vitamin D and calcium supplementation effects in the case of non-consolidating of the fracture nonunion.

Study design: non-randomized intervention study.

Place and duration of the study: This study was conducted from January 2015 to January 2016 for the period of one year in Lahore General Hospital.

Methodology: Total fourteen patients were selected for study. vitamin D, Serum calcium and parathyroid hormone levels (PTH) were checked in all selected patients. 2 main groups of patients were made. In Group 1, only vitamin D and calcium were given, Group 2 was divided into two subgroups. In the subgroup (A), surgical support was provided with vitamin D and calcium application, and the second subgroup (B) was operated without supplementation. Calcium and Vitamin D supplement were applied in Tab Qalsan, 1 OD and 0.5µg tab Bone One. The events were performed on a monthly basis. Until the fractures were combined vitamin D and Calcium supplementation continued.

Findings: Males were 85.71% in this study. 37.71 was the average age. The mean duration of the lesion applied with pseudoarthrosis was 11.4 months in our study. Of the 14 patients in total, 5 were treated with only calcium and D3 vitamins. Two patients received calcium and D3 vitamin therapy. Seven patients underwent surgery without D3 and calcium vitamins. serum calcium low levels in 2 patients, low serum D vitamins in 6 patients, and parathyroid hormone levels low in 1 patient. The 95% confidence interval, which is an endocrine or metabolic abnormality in patients with pseudoarthrosis, increased from 27.01% to 73.02% according to the Modified Wald method. All the patients got a bone marrow. 6 months was the mean duration of the union.

Conclusion: 6 of our patients with long bone pseudoarthrosis had Vitamin D deficiency. Calcium and vitamin D were coordinated with oral replacement. This suggests that metabolic supplements play a role in the fusion of fractures after surgical intervention.

Key words: Bone, Cerebral fracture, vitamin D, hormone.

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INTRODUCTION:

Broken alienations and fractures adjustments problems are rarely seen but may be multifactorial. Approximately five to ten percent of all patients have issues to achieve a precise combination of fractures. The major difficulty is the unbreakable fracture of the normal biological process of healing, resulting from sona, so that it is not a solid bone union without any other treatment. Some aggravating factors include low vascularization, fracture instability, decreased fracture failure, and poor bone-reunion. In other cases, a patient may have a well-balanced fracture that does not participate. The role of endocrine abnormalities and metabolic bone disease in pseudoarthrosis is often overcome. calcium, D vitamins and parathyroid hormone abnormalities can adversely affect the fractures healing process due to the importance of bone metabolism. In our environment, calcium and vitamin D vitamin supplements were not routinely prescribed. Calcium intent was determined by the effect of calcium and vitamin D supplementation on bone defect deficiency.

MATERIALS AND METHODS:

This non-randomized intervention study was conducted from January 2015 to January 2016 for the period of one year in Lahore General Hospital. A total of 20 patients were selected. All patients with pseudoarthrosis who were infected, defective or pathologically fractured were excluded from the study. 14 cases met inclusion criteria.

The criteria for participation were:

1. Lack of consolidation despite sufficient initial reduction and stabilization
2. Story of multiple low-energy fractures with at least one progression to union shortage
3. Minimally displaced fractures Unchanged or progressing in the absence of the association.

The diagnosis of lack of consolidation has been confirmed in the presence of one or more of the following situations:

1. Strong motion in the injury area of the physical examination.
2. Movement of the injury site under fluoroscopy stress
3. As described by Heckman et al., Bone colon at 4 of the
- 4 Anteroposterior and lateral cortices radiographs.

Approval of the Hospital Ethics Committee was requested for the study. For metabolic examination

all patients were sent to pathology. Distribution of untreated type 6: atrophic, oligotrophic and hypertrophic. A treatment orthopedic surgeon based on simple radiographs has identified the type of pseudoarthrosis. Oligotrophic pseudoarthrosis was defined as having significantly less blood flow or less or no formation of callus. Atrophic pseudoarthrosis was defined as those with insufficient blood flow and no callus formation. Hypertrophic pseudoarthrosis was found in abundant callus, but with an open radiolucent line in the fracture site. Only calcium and D3 were applied with vitamine supplements. Group 1B consisted of patients without metabolic disturbances but treated with calcium and D3 vitamine supplements. Group 2A consisted of patients with metabolic disorders but operated on calcium and D3 vitamine supplements. Group 2B consisted of patients with metabolic disorders operated on without calcium and D3 vitamine supplements. Group 2C consisted of patients who had no metabolic insufficiency but were operated on due to lack of trade union.

RESULTS:

There were 12 men (85.71%) and 2 women (14.28%) in this study. The average age was 38. The average time from the first break to this presentation is eleven months. atrophic, 5 (35.71%), oligotropic 5 (35.71%) and 4 (28.57) type hypertrophic pseudarthroses. 1 (7.14%) scaphoid, 1(14.28%) 1 sinus fibula, (7.14%) intertrochanteric 2 (14.28%),1 (7.14%) axis ulna, distal thigh bone, 2 pseudoarthrosis Location (14.28%) lateral malleol, 2 (14.28%), tibia 1 (7.14%) and 3 (21.42%) of the upper arm shaft. 4 (28.57) cases were group 1 (fractured tibia and fibula, femur fracture, lateral malleolus fracture, femur fracture), 1 group B (femur fracture), 2 (14.28% (Lateral malleolar fracture, distal femur fracture), group 2A fracture) intertrochanteric femur, ulnar fracture axis, third distal (third fracture) fracture involving the scaphoid fracture group 2B (shaft fracture tibia), 6 (42.86% femur and humerus axis). Six (42.86%) patients had vitamin D3 deficiency. Three of the patients (21.42%) had vitamin D3 deficiency and 3 had insufficiency. Of these 6 patients, 2 had low serum calcium and 1 had low serum PTH levels. metabolic or endocrine abnormalities in pseudoarthrosis patients, 95% confidence interval 73.2% 26.8% according to the Wald method.

Table 1: Salient characteristics of 14 patients included in the study

Sr No	Age (yrs)	Sex	Duration at presentation (months)	Location of Nonunion & Type	Group	Metabolic abnormality & Normal range of values	Medical and surgical treatment given	Outcome of treatment
1	29	male	7	Fr shaft tibia and fibula (Right) (oligotrophic)	1A	- Vit D3 [55nmol/l], (deficiency <30nmol/l, insufficiency 30-75nmol/l, sufficiency >75 nmol/L), - Serum calcium ionized [1.13mmol/l] (1.16-1.32 mmol/l)	Conservative management. Tab Qalsan 1x OD and Tab Bone One 0.5ug 1xOD	Showed union in 6 months
2	59	male	12	Fracture shaft of femur (Right) (hypertrophic)	1A	- VitD3 [22nmol/l], (deficiency <30nmol/l, insufficiency 30-75nmol/l, sufficiency >75 nmol/L)	Closed intramedullary interlocking nail two yrs ago. Put on tab Qalsan 1xOD and tab Bone One (0.5 ug) 1xOD after one year	Showed union in one year
3	37	male	6	Fracture lateral malleolus (Left) (atrophic)	1A	PTH was low [0.45pmol/l] (0.8-6.0pmol/l)	Tab Qalsan 1xOD, Tab Bone One (0.5ug) 1xOD	Showed union in 3 months
4	32	male	30	Shaft of fibula (Left) (oligotrophic)	1A	Vit D3 <10nmol/l] (deficiency <30, insufficiency 30-75, sufficiency >75 nmol/L)	Tab Qalsan 1x tab OD, Tab Bone One 0.5 ug 1 x OD	Showed union at 1 year
5	34	male	12	Shaft of femur (Right) (atrophic)	1B	None	Closed intramedullary interlocking nail 02 yrs ago. Put on tab Qalsan 1xOD, tab Bone One (0.5ug) 1xOD for last one year	Union in one year
6	30	male	12	Lateral malleolus (Left) (atrophic)	2A	Vit D3 was deficient [12nmol/l], PTH was low [0.36pmol]	Tension band wiring + bone grafting + tab Qalsan 1 x OD and tab Bone One 0.5ug 1xOD.	Showed union in 2 months
7	19	female	14	Distal femur (Right) (hypertrophic)	2A	Vit D3 was insufficient [32 nmol/l]	ORIF + bone grafting + tab Qalsan 1xOD and tab Bone One 0.5ug 1xOD	Showed union in 2 months
8	19	male	6	Tibial diaphysis (Right) (atrophic)	2B	Vit D3 was insufficient [35 nmol/l] (deficiency <30, insufficiency 30-75, sufficiency >75 nmol/L),	Ex Fix converted to Closed Interlocking Nail	Showed union in 6 months

Modified Wald interval (also called Range Wald modified) samples If you want a 95% confidence interval, create a range containing this formula, ie less than 150, the proportion that provides the best coverage for the specified interval is the average percentage of time Lt; / RTI & gt; All the patients got a bone marrow. The average duration of the union is 6.4 months. This group consisted of group 1B 12 months, 1A, 8.25 months, group 2B 6 months, group 2A 2 months, group 2C 5.16 months. The fastest binding rates observed in 2A and 1A showed that metabolic reinforcement made binding faster. Laboratory tests for vitamins PO₄, Ca, vitamin D₃ in serum for groups 2A, 1A and 2B had normal values after 2 months. Calcium and D₃ vitamin supplementation resulted in binding in a case of group 1B with no calcium or D₃ deficiency. This patient presented a femur pseudoarthrosis for one year after the first intramedullary nail was nailed. (Table 1)

10	65	male	6	Intertrochanteric Fr Femur (operated CRIF-DHS) (oligotrophic)	2C	None	Revision DCS+ bone grafting	Union in 8 months
11	62	male	12	Shaft of ulna (Right) (hypertrophic)	2C	None	ORIF and bone grafting	Union in 4 months
12	35	male	9	Distal third femur (Right) (hypertrophic)	2C	None	DCS replaced with LCP distal femoral LCP + bone grafting	Union at 6 months
13	57	female	12	Humerus (Right) (oligotrophic)	2C	None	ORIF and bone grafting	Showed union in 4 months
14	22	male	12	Shaft of femur (Left) (oligotrophic)	2C	None	DCP was replaced with intramedullary interlocking nail.	Showed union in 3 months

DISCUSSION:

Our example shows that 50% of our patients with pseudoarthrosis have untreated metabolic abnormalities. These findings are not dependent on the patient's age, sex, or type of pseudoarthrosis. Our results suggest that metabolic abnormalities play a role in the development or continuation of syndrome in some patients. Bone association after medical treatment was obtained after 4 metabolic abnormalities were detected in 4 patients in group 1A, although there was no causal relationship between metabolic abnormalities in our study and improvement in improvement or healing. There was a patient in Group 1B who did not have a metabolic disorder but responded well to oral calcium and vitamin D supplementation. He had several metabolic and endocrine factors including kidney response, growth factors, bone morphogenetic proteins, biochemical vitamin interactions, minerals and hormones. Changing any of these factors can affect the healing of the fracture. Based on the results of many endocrine and endocrine studies, all patients associated with metabolic changes of metabolic disorders and affecting these factors are preferably sent to an endocrinology, such as the inclusion

criteria we are offering. evaluation. Appropriate medical treatment at the initial stage of fracture healing should identify and provide such anomalies. For example, if insufficient levels of vitamin D in the general population are included in the account due to high prevalence, it is possible that many patients suffering from a fracture may have a deficiency of vitamin D that may contribute to the onset of separation. The development of these selection criteria will require prospective studies for large patient samples with endocrinological evaluation. In our study, half of the patients with pseudoarthrosis were found to have metabolic and endocrine abnormalities. Nevertheless, the design of our study has not allowed me to show that there is a causal link between the deficit of the union and the metabolic insufficiency. Medical treatment is effective only in patients suffering from metabolic disorders on July 4, despite lack of absence in the patient, oral response to calcium and vitamin D, and robust bone marrow.

CONCLUSION:

Metabolic reinforcements also play a role in the fusion of fractures after surgical intervention. Appropriate clinical evaluation criteria for identifying

fractures with high risk of high consolidation due to these abnormalities can also be developed with these studies. By the time we find a causal connection, such as oral calcium and vitamin B vitamins in the bone mineral supplements routinely can be given to suffer painful fractures.

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