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BONE MINERAL DISEASE IN PATIENTS WITH CHRONIC KIDNEYDISEASE

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Abstract:

Objective: *To explore the bone mineral disease in patients with chronic kidney disease.*

Patients And Methods:*A total of fifty patients of chronic kidney disease were explored and included in the study. The cross-sectional survey includes newly patients diagnosed as CKD by the abbreviated modificationof diet in renal disease formula, biochemical and ultrasonographic / histological evidence of CKD while the exclusion criteria were those who had preexisting parathyroid abnormalities already on non-steroidal anti inflammatory drug, antiepileptics, known hepatic diseases, rickets, osteomalacia and renal transplant patient. After informed consent with aseptic precautions, about 8 ml of venous blood was obtained to analyze for serum vitamin D, intact PTH and plain radiograph for bone lesions and BMD was measured by dual-energy X-ray absorptiometry to estimate the T-score whereas the frequency / percentages (%) and means ±SD computed for study variables.*

Results:*During six month study period total fifty patients with chronic kidney disease were explored and study. the mean ± sd for age (yrs) of population was 51.88±7.51. Regarding gender male 32 (64%) and female 18 (36%), hypocalcemia 36 (72%), vitamin d deficiency 35 (70%), hypomagnesemia 26 (52%), hyperphosphatemia 29 (58%) and z-scores on dxa ≤2 (56%) and parathyroid hormone was raised in 32 (64%), normal 08 (16%) and low in 10 (20%) individuals.*

Conclusion:*Vitamin D lack and high pervasiveness of unsettling influences of other mineral digestion including hyperparathyroidism and abnormal BMD is noted in initial phases of CKD.*

KeyWords: *Bone mineral disease and chronic kidney disease*

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INTRODUCTION:

Chronic kidney disease (CKD) is currently a general medical issue influencing an expected 10-13% of the total populace [1] As renal capacity decays, there is a dynamic weakness in the guideline of mineral homeostasis prompting changed serum centralizations of calcium, phosphate, parathyroid hormone (PTH) and Vitamin D [2].These progressions can be recognized as ahead of schedule as when the evaluated glomerular filtration rate (eGFR) tumbles to ≤60 mL/min/1.73 m2 body surface region [3]. Early discovery and the board of CKD-related mineral bone issue (CKD-MBD) is significant as it is connected with expanded cardiovascular mortality due to related expanded danger of delicate tissue, vascular, and heart valvular calcification [4]. Range of CKD-MBD has been inadequately contemplated in Pakistani CKD patients, particularly in the pre-dialysis arrange. Early identification and the executives of CKD-MBD is significant as it is connected with expanded cardiovascular mortality due to related expanded danger of delicate tissue, vascular, and heart valvular calcification.

PATIENTS AND METHODS:

A total of fifty patients of chronic kidney disease were explored and included in the study. The cross-sectional survey includes newly patients diagnosed as CKD by the abbreviated modificationof diet in renal disease formula, biochemical and ultrasonographic / histological evidence of CKD while the exclusion criteria were those who had preexisting parathyroid abnormalities already on non-steroidalanti-inflammatory drug, antiepileptics, known hepatic diseases, rickets, osteomalacia and renal transplant patient. After informed consent with aseptic precautions, about 8 ml of venous blood was obtained to analyze for serum vitamin D, intact PTH and plain radiograph for bone lesions and BMD was measured by dual-energy X-ray absorptiometry to estimate the T-score. The data was collected on pre-designed proforma and analyzed in SPSS to manipulate the frequencies and percentages.

RESULTS:

During six-month study period total fifty patients with chronic kidney disease were explored and study. The mean ± SD for age (yrs) of population was 51.88±7.51. The demographical and clinical profile of study population is presented in Table 1.

TABLE 1: The Demographical And Clinical Profile Of Study Population

Parameter	Frequency (N=50)	Percentage (%)
AGE (yrs)		
20-29	03	6.0
30-39	10	20
40-49	13	26
50-59	15	30
60+	09	18
GENDER		
Male	32	64
Female	18	36
HYPOCALCEMIA		
Yes	36	72
No	14	28
VITAMIN D DEFICIENCY		
Yes	35	70
No	15	30
HYPOMAGNESEMIA		
Yes	26	52
No	24	48
HYPERPHOSPHATEMIA		
Yes	29	58
No	21	42
Z-SCORES ON DXA		
≤2	28	56
>2	22	44
PARATHYROID HORMONE		
Raised	32	64
Normal	08	16
Low	10	20

DISCUSSION:

The prevalence of hypoparathyroidism is 20% showing the conceivable heap of low turnover bone disorder, though hyperparathyroidism is noted in 64% demonstrating high turnover bone disorder. We found a high prevalence of hypocalcemia (72%), hyperphosphatemia (58%) and low vitamin D levels (70%) in kidney failure patients. In patients with CKD BMD of the hip and radius is by and large lower; lumbar spine BMD is like that in the overall population. In the overall population, a low BMD predicts fracture and mortality. The capacity of BMD to foresee fracture or other clinical disorder in patients with CKD stages 4–5 is feeble and conflicting. The explanations behind the bad DXA in patients with CKD are not characterized. Incompletely, this is on the grounds that the estimations may overestimate BMD because of ligament conditions, scoliosis, and aortic calcifications. Patients with CKD, particularly those with a high serum PTH, have expanded cancellous bone volume however diminished cortical thickness. A few different cross-sectional examinations have likewise demonstrated that BMD on DXA anticipated fracture status in patients with CKD [5-8]. The BMD by DXA was lower in those with serious osteitis fibrosa in the study by Fletcher, et al [9] on 73 patients, especially at the proximal forearm. In astudy by Jabbar et al, [10] about 37.5% and 12% of the patients demonstrated osteopenia and osteoporosis separately.

CONCLUSION:

Vitamin D lack and high pervasiveness of unsettling influences of other mineral digestion including hyperparathyroidism and abnormal BMD is noted in before phases of CKD in this manner the screening should start in the underlying phases of chronic renal disease

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