



ANALYSIS OF 25-HYDROXIVITAMIN D3 LEVELS, CALCIUM LEVEL IN PLASMA AND METASTATIC CALCIFICATIONS IN HAEMODIALYSIS PATIENTS

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INTRODUCTION AND AIM: It's well known that's serum level of haemodialysis patients is very low even they are treated with vitamin D3 supplements according to official guidelines. Plasma calcium concentration has just very large variation, but mostly in normal range. There are no evidence that high level of plasma calcium cause metastatic calcification in most patients. Many other factors contribute with metastatic calcification. Among others, parameters of inflammation mostly contribute with metastatic calcifications. The aim of the study is to analyze if serum concentration of 25-hydroxivitamin D3 and calcium level correlate with metastatic calcification in haemodialysis patients.

Not only for CKD and bone metabolism (calcium and phosphate homeostasis) the appropriate vitamin D plasma level (1) of great importance. Many of cardiovascular complications in patients with CKD may be linked to vitamin D deficiency; Involved in regulatory immune system mostly for effective phagocytosis; Regulatory function in autoimmune diseases; Infection diseases; Cardiovascular diseases;

METHODS:

Clinical and laboratory parameters were analyzed in haemodialysis patients, plasma level of 25-hydroxivitamin D3, plasma level of calcium, phosphorus and radiologic verification of metastatic calcifications. Study includes 96 haemodialysis patients, 52,4 were male and 47,6 female. Among them 11 (12%) glomerulonephritis based on autoimmunity, 7 out of all registered antinuclear autoantibody. 89 (92 %) take supplemental Vitamin D3 therapy as oral or IV rout.

RESULTS AND DISCUSSION:

Among total of 96 patient 91(95%) have 25-hydroxivitamin D3 deficiency nevertheless if they take or not vitamin D3 supplements. In 82 patients (85%) calcium level in plasma were in normal range (2,25-2,75 mmol/L), in five patients (5%) calcium level were above normal range, and in 9 patients (9%) plasma calcium level were below normal range. Metastatic calcifications were seen in 18 patients (19%). In three patient

Regulatory role in renin-angiotensin system, diabetes including regulation of insulin resistance. Because of many new discovered roles of vitamin D all of these roles were divided in two groups: Classical (bone and calcium-phosphate homeostasis, skeletal health); No classical (no skeletal health) – the newly listed ones described above (4,5). Metabolic activation is mostly performed in kidney, but at the same time in many other tissues. Activation of Vitamin D in different places in the body is considered an autocrine pathway. Utilization of Vitamin D is very high in the whole body, with immediate local degradation. So, circulating component of vitamin D is minimal. Vitamin D binds to intracellular vitamin D receptor (VDR) and has one crucial role in transferring a signaling cascade that bridges external stimuli to gene transcription. Its is very important have steady state balance of vitamin D, calcium and phosphorus in the blood. If the balance was not achieved it is possible for two solution: Inappropriate calcium and phosphorus levels in the blood or metastatic calcification in soft tissue.

calcification was seen in tendons of muscles of lower extremities, in two patients in muscles of neck, and on most patients 13 patients metastatic calcifications were seen in shoulder tendons. Metastatic calcification were seen in 15 patients with calcium level in normal range (in upper level of normal range), and in only one in high level, but in two patients with calcium level below normal range. Metastatic calcifications occur more often if inflammatory syndrome is present in patient, if C-reactive protein has increased level or uric acid has increased level.

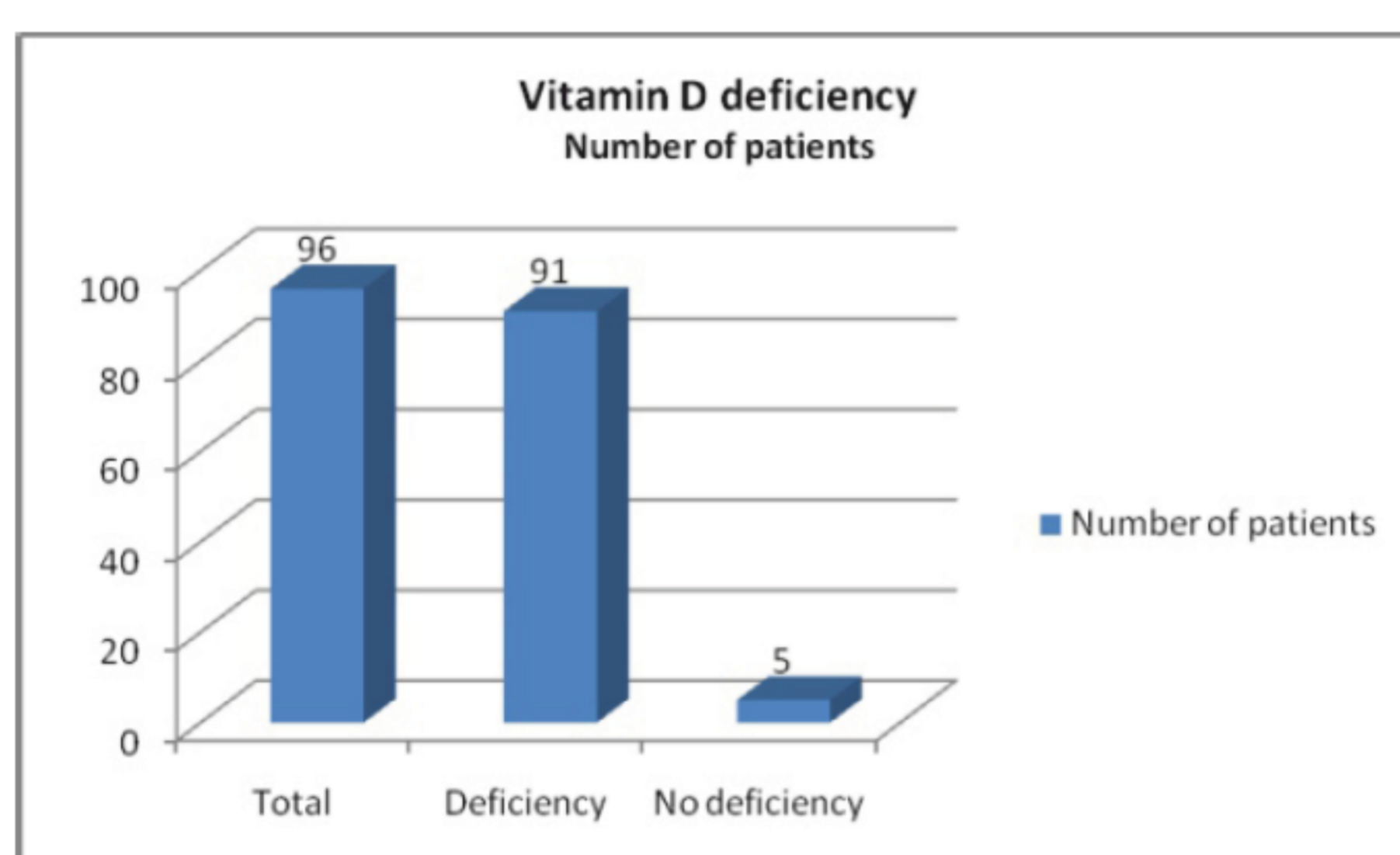


Figure 1. Number of patients with vitamin D3 deficiency

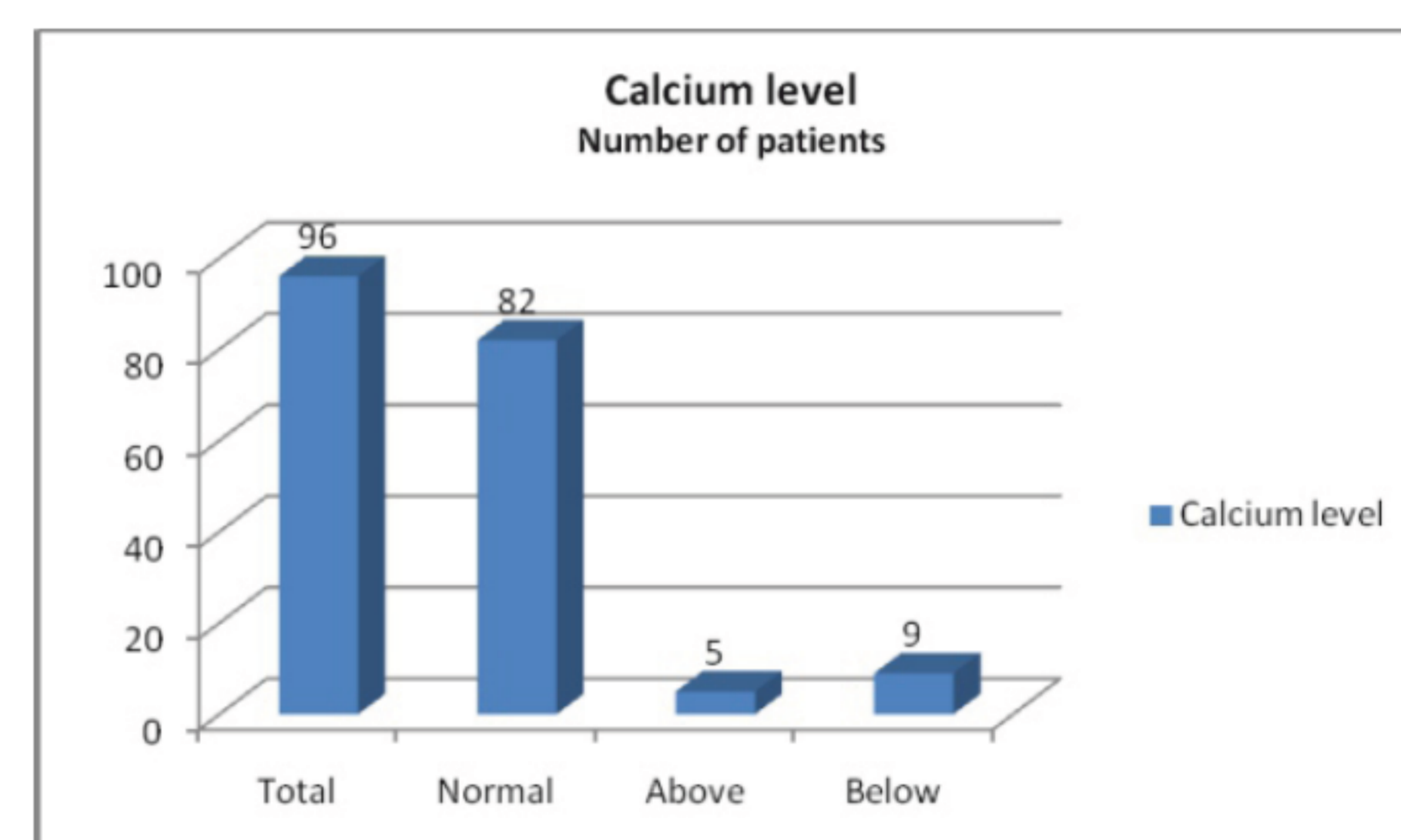


Figure 2. Number of patients with normal or nonnormal calcium level in the blood

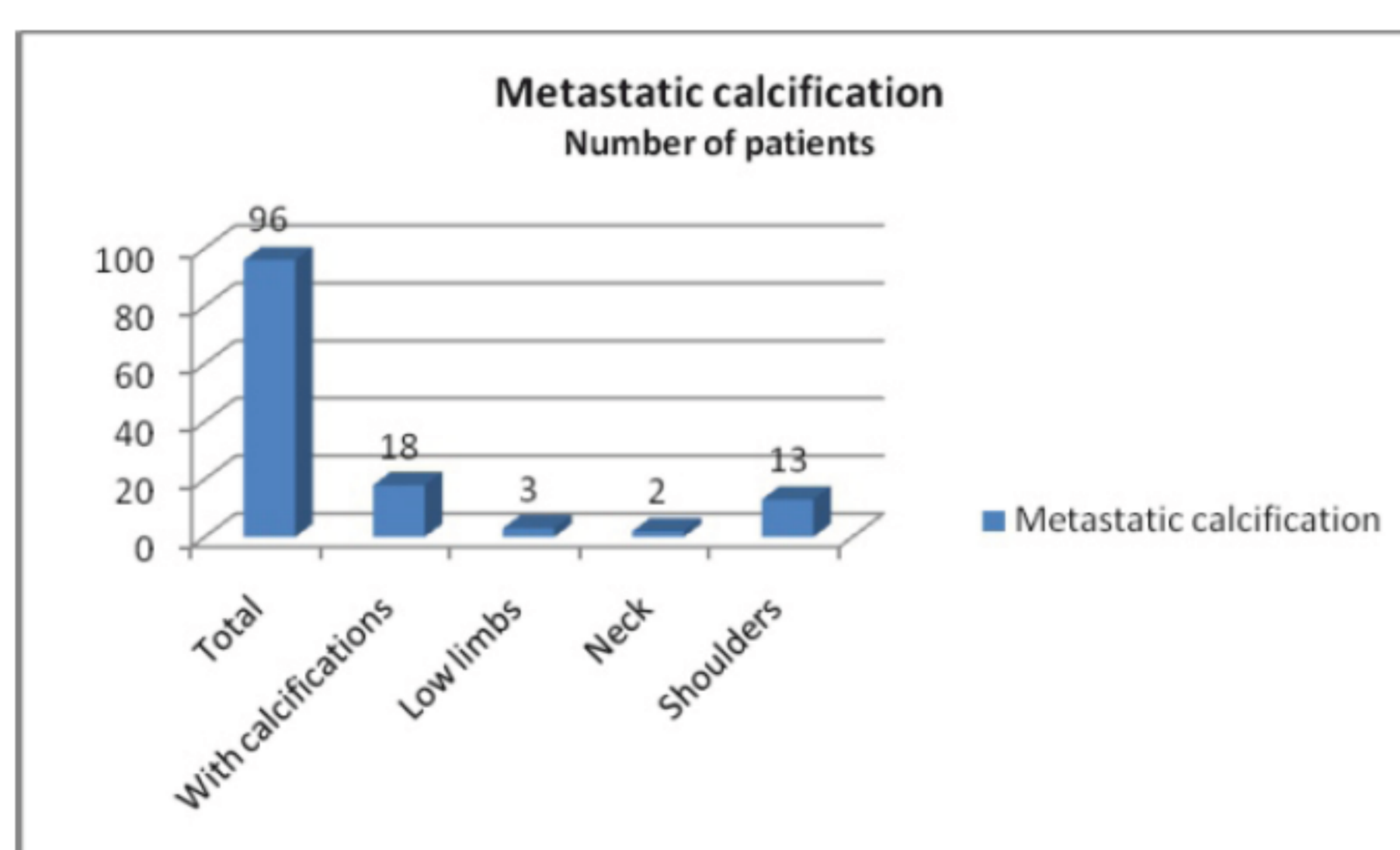


Figure 3. Number of patients with metastatic calcifications and it's localisation

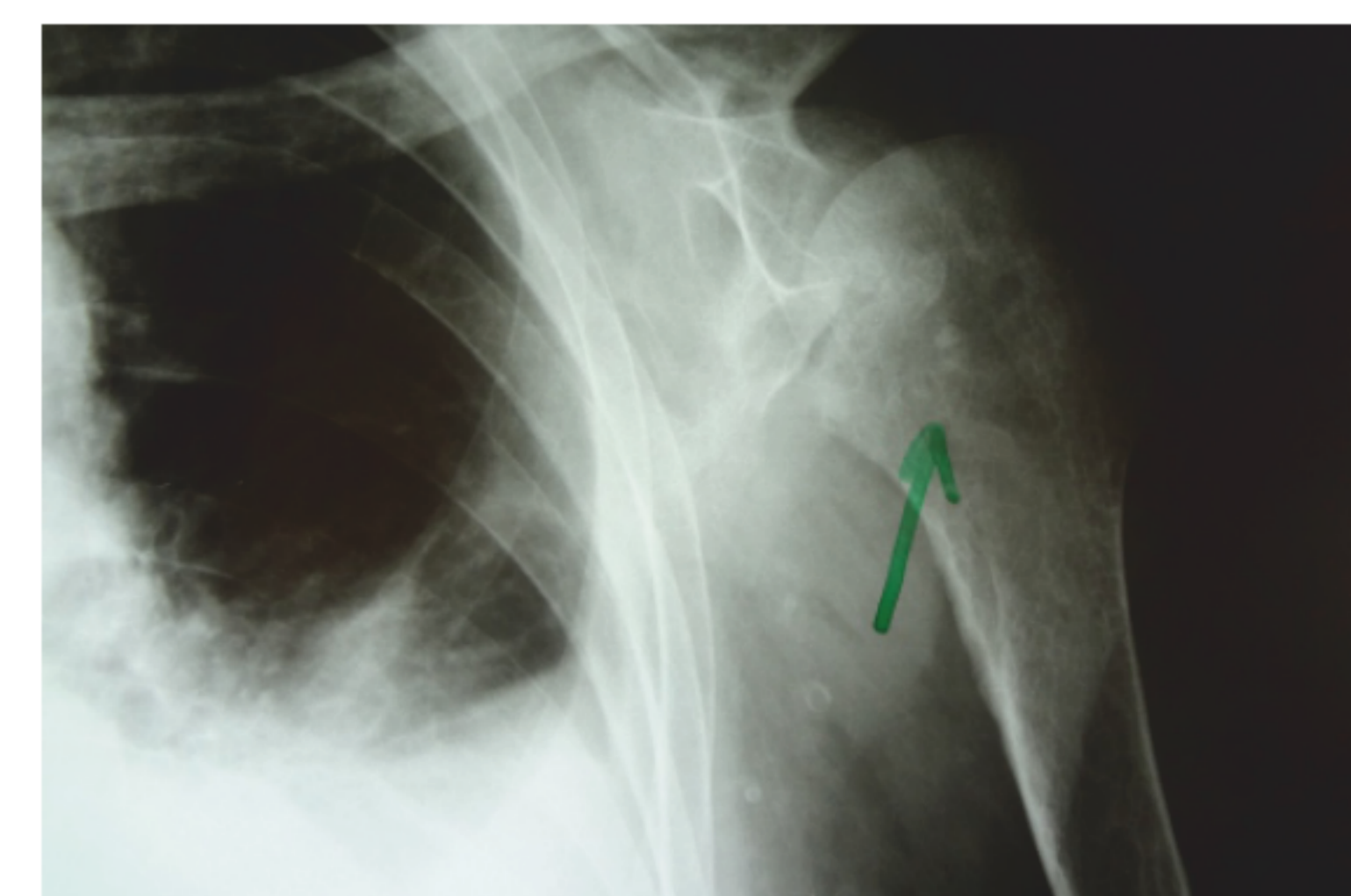


Figure 4. X-ray image of metastatic calcification

CONCLUSION: Deficiency of 25-hydroxivitamin D3 were registered in most haemodialysis patients, calcium level in normal rang in most patients so, but metastatic calcification were registered in patients without strong correlation neither with calcium nor Vitamin D3 level.

KEY WORDS: Vitamin D3, haemodylisis, metastatic calcifications.

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