

A rare cause of the chronic diarrhea in geriatric patients: Vitamin D deficiency

Geriatrik hastada kronik ishal etiyolojisinde nadir bir neden: D vitamini eksikliği

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Dear Editor;

A 87-year-old male patient was admitted to the gastroenterology outpatient clinic with the complaint of weakness, loss of appetite and bloodless, mucous and watery diarrhea 7-8 times a day for two months. The diarrhea of the patient was not related to eating and did not continue at night. Recently, there was no travel history, dirty water-food history, or suspected drug intake history to cause diarrhea. On physical examination of the patient, it was seen that the skin turgor tonus decreased and he was sluggish. His vitals were stable. He also had severe pain in her left hip and had difficulty getting up from her chair. Other physical examination findings were normal. White blood cell count (WBC): $6.5 \times 10^3/\mu\text{L}$, hemoglobin: 7.9 g/dl (12-16 gr/dl), potassium: 2.9 mmol/L (3.5-5.1), calcium: 5.7 (8.8-10.2), phosphorus: 2.9 mmol/L (3.5-5.1), albumin: 2 g/dl (3.5-5.2), C-Reactive protein (CRP): 109 mg/L, sedimentation: 62 mm/hour, urea: 66 mg/dl, creatinine: 1.84, total bilirubin: 0.6 mg/dl, serum iron: 15 mg/dl (60-180), serum total iron binding capacity (TIBC): 146 mg/dl (155-355), ferritin: 625 ng/ml (15-300), vitamin B12: 391 pg/ml (211-911), thyroid-stimulating hormone (TSH): 0.95 $\mu\text{IU/ml}$ (0.35-5.5). Additional tests were performed to investigate the etiology of diarrhea. The blood test in the feces was negative. The microscopic examination of the feces had no features and the entamoeba histolytica antigen was negative. There was no feature in chest radiography and urinalysis. Mild antral gastritis was detected in the endoscopic examination of the upper gastrointestinal tract performed due to anemia and diarrhea. Colonoscopic examination was compatible with normal ileocolonoscopy. In our patient with anemia, sedimentation and CRP elevation and complaints of hip pain, pro-

tein electrophoresis was studied by considering multiple myeloma. Findings consistent with polyclonal gamopathy were detected. Computed tomography showed fragmented, nondepleted fracture lines at the level of trochanter major in the left femur neck localization (Figure 1). In all body scintigraphy performed with 20 mCi Tc-99m methylene diphosphonate (MDP), increased radiopharmaceutical involvement was observed in the left femoral neck and trochanter major, which are thought to be secondary to trauma (Figure 2). In our patient with hypocalcemia and hypophosphatemia, 25 OH-D: 9.31 pg/ml (20-100) and parathyroid hormone (PTH): 600 pg/ml (10-72) was detected. Parathyroid scintigraphy with 15 mCi Tc-99m MIBI was normal. Secondary hyperparathyroidism and fractures due to vitamin D deficiency were considered in



Figure 1. Computed tomography showed fragmented, non-displaced fracture lines at the level of trochanter major in the left femur neck localization (blue arrow).

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the diagnosis. The patient was started on calcium and vitamin D replacement. Following this, the level of calcium, phosphorus and albumin became normal. The patient's appetite improved, his diarrhea and weakness in his legs



Figure 2. In the whole body scintigraphy performed with 20 mCi Tc-99m MDP, increased radiopharmaceutical involvement was observed in the left femoral neck and trochanter major, which are thought to be secondary to trauma.

completely healed. Along with analgesic treatment, the complaint of hip pain regressed significantly. The patient, whose general condition improved, was discharged with recommendations. In addition, it was thought that there was no other etiological cause that could explain the patient's diarrhea and that the etiological cause could be vitamin D-deficiency due to the regression of chronic diarrhea after vitamin D replacement. In addition, the absence of any other etiological cause that could explain the patient's diarrhea and the regression of diarrhea after vitamin D replacement suggested that vitamin D deficiency may be the etiological cause.

Chronic diarrhea is one of the frequent admission symptoms to gastroenterology outpatient clinics and its incidence in the community is approximately 5% (1). Many causes such as infections, excessive bacterial growth in the intestine (SIBO), irritable bowel syndrome (IBS), inflammatory bowel disease (IBD), medications, microscopic and collagenous colitis, thyrotoxicosis, amyloidosis, lymphoma, diverticulitis and colon malignant neoplasm play a role in etiology (2). Chronic diarrhea-malabsorption coexistence is frequently observed and consequently deficiencies of some vitamins and minerals accompany the picture. Vitamin D (Vit-D) deficiency is especially common in the geriatric population living in elderly care homes and is an important health problem (3). Besides the well-known effects of vitamin D deficiency on bone metabolism, it has been found to be associated with many chronic diseases such as malignancy, cardiovascular diseases, infectious and autoimmune diseases (3). However, there are not much studies in the literature showing that vitamin D deficiency can cause chronic diarrhea.

Muscle weakness and hypotonia were observed as the first sign of severe Vit-D deficiency in patients hospitalized in the intensive care unit. Muscle contraction and relaxation are abnormal in vitamin D deficiency and has been reported to improve with Vit-D replacement regardless of changes in mineral levels (3). Our patient had severe weakness especially in the proximal leg muscles. The patient's complaints decreased significantly after calcium and Vit-D replacement.

Low Vit-D levels cause impaired natural and adaptive immune response. In the studies carried out; low Vit-D level cause increased sensitivity to influenza, tuberculosis, human immunodeficiency virus (HIV) and staphylococcus aeriis infections (4). Wang et al. investigated the effects of Vit-D deficiency on the immune system, infectious disease and overall mortality. In this study 62 patients with *Clostridium difficile* disease (CDAD); they evaluated the factors affecting the recurrence of diarrhea and death

within 30 days. They found that low Vit-D levels and patients over 70 years of age were factors affecting CDAD recurrence and mortality (4).

We detected deep anemia in our patient. Because of deep anemia and chronic diarrhea, we performed upper and lower gastrointestinal system endoscopic examinations and we could not detect any pathology to explain anemia. Lau et al. stated that high PTH levels have toxic effect on erythroid progenitors in the bone marrow, induces fibrosis in the bone marrow and may cause anemia by causing hemolysis (5). We think that high PTH level also contributes to deep anemia in our patient.

Polyclonal gammopathies can be caused by a reactive or inflammatory process and are often associated with non-malignant conditions. Serum protein electrophoresis is generally sufficient to evaluate these conditions and is

seen as a broad band in the gamma region in polyclonal gammopathy (6). We thought that the polyclonal gammopathy detected in our patient's protein electrophoresis might be associated with the disruption of the immune system and changes in the intestinal flora secondary to Vit-D deficiency.

In conclusion, Vit-D deficiency is common in patients staying in elderly nursing homes and vitamin D supplementation is required in these patients in accordance with the literature. In addition, it should be considered that Vit-D deficiency may be effective in the etiology of geriatric patients presenting with chronic diarrhea.

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