



Diffuse Gastric Uptake and Metabolic Superscan in the Patient with Multiple Myeloma

Multipl Miyelomlu Hastada Yaygın Gastrik Tutulum ve Metabolik Superscan

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Abstract

Metastatic calcification is characterized by abnormal deposition of calcium in extraosseous tissues resulting from disruption of calcium-phosphorus homeostasis. It occurs without tissue damage and is usually seen in normal organs. It is most commonly observed in patients with chronic renal failure, paraneoplastic hypercalcemia, and vitamin D intoxication. Metabolic superscan is characterized by diffusely increased skeletal activity with suppressed renal visualization, often without soft-tissue involvement. This pattern reflects altered radiotracer biodistribution secondary to severe metabolic bone turnover. We report a case of multiple myeloma in which diffuse ^{99m}Tc-MDP uptake was observed in the stomach on a metabolic superscan.

Keywords: Multiple myeloma, metabolic superscan, gastric uptake, hypercalcemia, methylene diphosphonate, bone scan

Öz

Metastatik kalsifikasyon, kalsiyum-fosfor homeostazının bozulması ile kemik dışı dokularda anormal kalsiyum birikimiyle karakterize durumdur. Dokuda hasar olmaksızın meydana gelir ve genellikle organ fonksiyonu normal olan dokularda görülür. Sıklıkla kronik böbrek yetmezliği, paraneoplastik hiperkalsemi ve D vitamini intoksikasyonu durumlarına eşlik eder. Metabolik superscan ise kemik sintigrafisinde renal aktivitenin kaybıyla giden diffüz artmış kemik tutulumunu ile karakterize durumdur. Genellikle kemik dışı organ tutulumu görülmemektedir. Bu patern, yoğun metabolik kemik döngüsüne bağlı bozulmuş radyoizotop biyodağılımını yansıtmaktadır. Bu çalışmada, metabolik superscan zemininde midede yaygın ^{99m}Tc-MDP tutulumu gösteren multiple myelom hastası sunulmaktadır.

Anahtar Kelimeler: Multiple myelom, metabolik superscan, gastrik tutulum, hiperkalsemi, metilen difosfonat, kemik sintigrafisi

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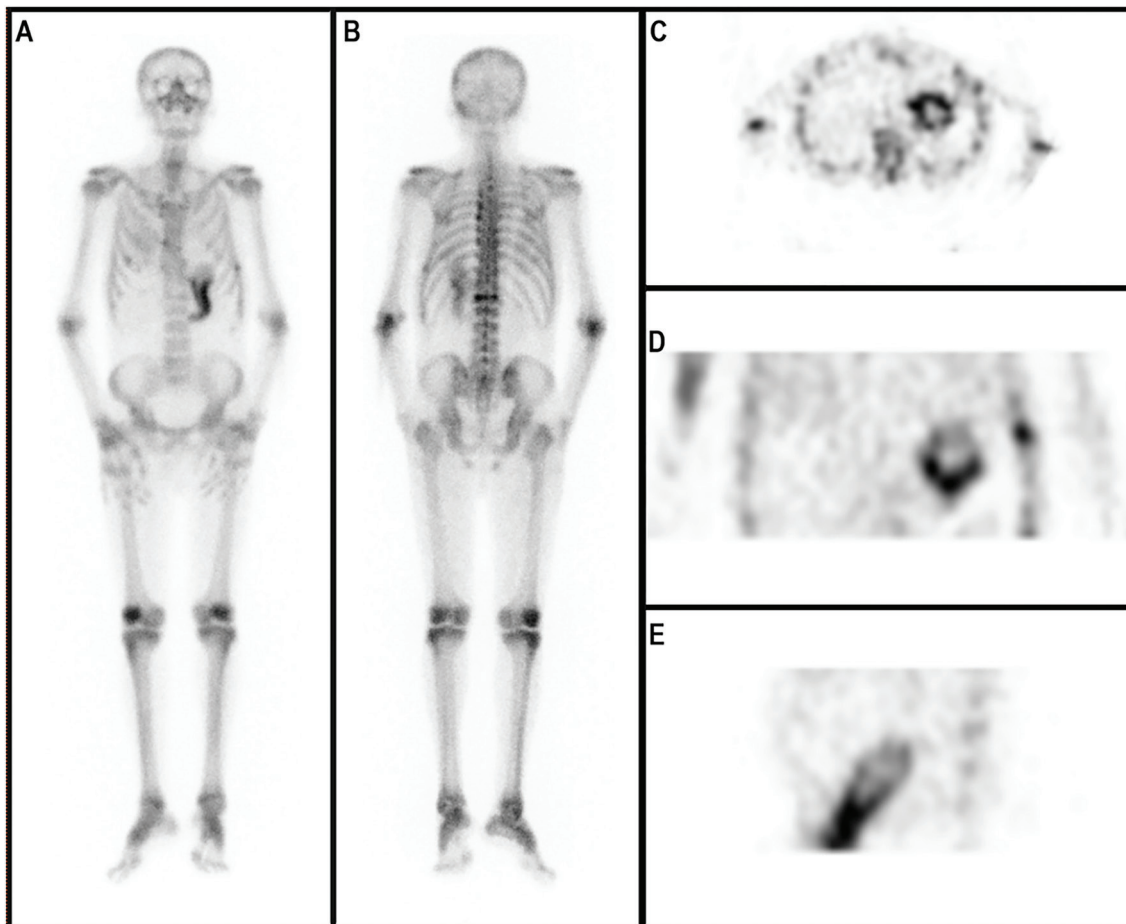


Figure 1. A sixty-seven-year-old man was referred for bone scintigraphy to evaluate a suspected paraneoplastic compression fracture of the lumbar vertebrae. The patient had advanced renal failure during the past year. In the tests conducted one day prior to imaging, calcium was 14.3 mg/dL (normal range: 8.5-10.5 mg/dL), albumin was 2.8 g/L, and his haemoglobin was 9.9 g/dL. The patient had widespread bone pain, predominantly involving the lumbar region. Bone scintigraphy revealed linear accumulation of activity in the first lumbar vertebra and focal increased uptake in various ribs on planar images (A, B) and diffuse increased ^{99m}Tc -MDP uptake in the gastric wall on SPECT axial, coronal, and sagittal images (C, D, E). There was no renal retention; the findings were consistent with the metabolic superscan. Written informed consent for the anonymized publication of clinical data and images was obtained from the patient prior to the initiation of the study.

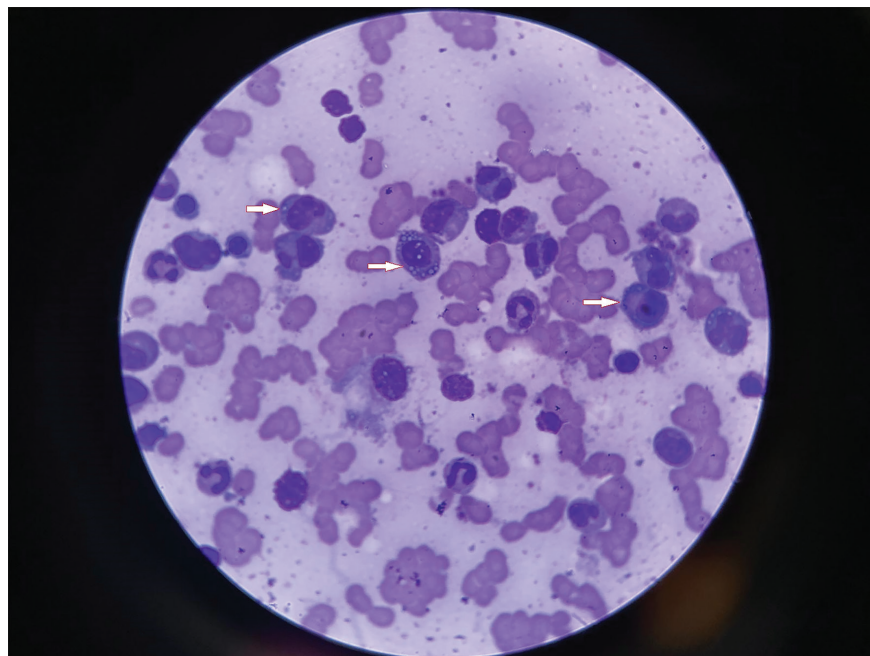


Figure 2. A bone biopsy was performed during vertebroplasty surgery, and atypical plasma cells were detected, which led to further investigation for multiple myeloma. Free kappa light chain was 22 mg/L, free lambda light chain was 4,550 mg/L, and the involved/uninvolved ratio was higher than 100. Bone marrow aspiration and biopsy were performed; more than 20% plasma cells (mostly bizarre forms and plasmablasts) were noted (Figure 2, arrows), and the amyloid stain was negative. The concurrent gastric mucosal biopsy was also negative for amyloid staining. The patient was diagnosed with lambda light-chain multiple myeloma. Free lambda light-chain concentration declined to 38 mg/L at the four-month follow-up after treatment. In the present case, diffuse gastric ^{99m}Tc -MDP uptake was observed in association with severe hypercalcemia and a metabolic superscan pattern in a patient with newly diagnosed multiple myeloma. Radionuclide bone scans are not routinely recommended in multiple myeloma since the disease usually progresses with osteolytic lesions (1). The disease is characterized by systemic amyloid deposits or hypercalcemia; cases of extrasosseous tracer uptake have rarely been reported, including gastric uptake (2,3,4,5). Kanoh et al. (6) performed gastric biopsies in a patient with myeloma who demonstrated amyloid deposits, and hypothesized that this was the cause of the observed activity. In our case, amyloid staining of the gastric mucosa was negative. Cases showing gastric uptake have been reported in the literature; however, the unique feature of our case was diffuse gastric involvement occurring concomitantly with a metabolic superscan, which has not been observed in other cases (7,8).

Ethics

Informed Consent: Written informed consent for the anonymized publication of clinical data and images was obtained from the patient prior to the initiation of the study.

Footnotes

Authorship Contributions

Surgical and Medical Practices: G.B.B., Ö.Ş., G.B., H.A., F.T., Concept: G.B.B., G.B., E.B., Design: G.B.B., H.A., E.B., Data Collection or Processing: G.B.B., H.A., E.B., Analysis or Interpretation: Ö.Ş., H.A., Literature Search: G.B.B., F.T., Writing: G.B.B., Ö.Ş., F.T., E.B.

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