Panorama *of* Emergency Medicine

Vol. 3 No. 1 2025 Case Report

Elderly Patient with Late Diagnosed Metastatic Bone Lytic Lesions

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ABSTRACT

Low back pain is a frequent reason for emergency department visits, pain management and screening for red flags should be considered for every patient, especially in elderly even with reassuring physical exam. In this case report, we discuss a case of an elderly patient who visited the emergency department many times with low back pain. His physical exam was reassuring. A low suspicion threshold, and a prompt history taking were the keys for diagnosis of bone-destroying lesions with multiple fractures and metastases. The patient had history of liver cirrhosis post hepatitis B, Alpha foetoprotein was high and he was diagnosed with metastatic hepatocarcinoma with extensive bone metastasis. Persistent pain, especially in older adults with progressive back pain, should be thoroughly investigated for serious conditions like bone metastases. Remember the "red flags" for lower back pain and note that physical exams may appear normal even with advanced bone issues.

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Submitted: 14 Sep 2024
First Revision: 18 Jan 2025
Second Revision: 16 Sep 2025
Accepted: 9 Oct 2025

Published by New Health Concept
panoramaoem.cloud

INTRODUCTION

Acute back pain is one of the main reasons for emergency department (ED) presentations, and constitutes 4.4% of emergency department applications worldwide [1]. Advanced age places the patient at higher risk and requires further investigation [4]. Malignancies and related metastatic bone lesions form a small part of people who present to the emergency department with low back pain [4]. However, it should not be forgotten in elderly people with low back pain [3]. Emergency physicians should utilize red flag screening methods to detect those with serious diseases and, thus, patients who need to be investigated [2, 3]. History of malignancy and cancer risk factors are considered among the serious red flags, since bone tissue appears as a frequent region in terms of metastasis. The presence of bone metastases is an indicator of poor prognosis in cancer patients. Prostate and breast cancers frequently metastasize to the skeletal system. Bone metastases occur much more often than primary bone cancers, especially in adults. The overall incidence of bone metastasis is unknown. The presence of bone metastases may cause severe pain as well as pathological fractures, limitation of mobility, bone marrow aplasia,

How to cite this paper? Al-Amri M, Majed K, Kodakatill D, T. Arun G, M. Baumy M, et al. Elderly Patient with Late Diagnosed Metastatic Bone Lytic Lesions. Panorama of Emergency Medicine. 2025,3(1) http://doi.org/10.26738/poem.v3i1.44

compression of the spinal cord, and hypercalcemia [5]. In this case report, we present a patient with extensive bony lytic lesions who were mobile despite having many pathological fractures and metastatic lesions that caused almost complete disappearance of one-half of the pelvis. The institution's approval was obtained from Medical Research Center (CIRC-RDB-43-12-2022), and written informed consent was obtained from the patient. The paper was presented at the World Academic Congress of Emergency Medicine in Antalya, Türkiye, from October 28 to 31, 2023.

CASE PRESENTATION

A sixty-seven-year-old male presented to the emergency department with a complaint of lower back pain for 4 months. There was no history of trauma. The pain was on and off, radiating to his right hip and gluteal region, worsening for the last two weeks, and associated with walking difficulty for the last ten days. Within this period, the patient was seen multiple times in primary health care services and at the ED. Detailed neurological examination was reported as normal. Non-steroidal anti-inflammatory drugs were prescribed at various times at the health center and ED, but the patient's complaints gradually increased, although there was no reduction in his pain during these four months. He had a past medical history of hypertension, chronic gastritis, and liver cirrhosis post hepatitis B, with no regular follow-up for the last three years. During the last ED visit, the patient's vitals were stable. On physical assessment, motor and sensory examination results were normal. There was tenderness in the right gluteal region and the lower back. At the same time, it was seen that the anal sphincter tone was normal. There was no saddle anesthesia or signs of dropping foot. The X-ray of the pelvis and thoracic spine showed a compression fracture of thoracic (T) 9 vertebra, absence of right pedicle of lumbar (L) 4 vertebra, destruction of bilateral pubic rami and ischial tuberosity, a large pelvic bone lytic lesion accompanied by a secondary pathological fracture, as well as a large soft tissue component eroding the adjacent part of the sacrum **(Figure 1)**.

Thoracolumbar spine and pelvis computed tomography (CT) performed and showed multiple lytic lesions in the thoracic and lumbar spine involving both vertebral bodies and posterior elements of the spine. Bilateral pelvic bones multifocal lytic lesions with pathological fractures are seen **(Figure 2)**.

Magnetic resonance imaging (MRI) of the spine showed multiple expansile osteolytic lesions along the axial skeleton, including the thoracic and lumbar vertebrae, ribs, and pelvic bones. A large expansile lesion involving the posterior neural element of the (T3) vertebra with intraspinal epidural soft tissue component compressing the posterior aspect of the upper thoracic cord was noted. Another expansile lesion, as seen in the (T6) and (T7) vertebra with a large soft tissue component totally occluding the neural canal, was noted **(Figure 3)**.

The patient was admitted to the neurosurgery department for pain management and further workup. Alpha fetal protein (AFP) level was 12,244 IU/ml (AFP normal level 0-6 IU/ml). Pan CT showed extensive bony lesions with soft tissue components through the cervical spine, cirrhotic liver with portal hypertension, and extensive portosystemic collateral formation, metastases involving the liver and the lung parenchyma. The most likely diagnosis was hepatocellular carcinoma with metastases. The case was discussed in the oncology team meeting, and a decision for palliative radiotherapy was made considering the patient's status and the cancer stage. The patient was discharged after one week, and a rapid appointment with the radiotherapy clinic was arranged.

DISCUSSION

In this case report, we presented a patient who came to the emergency department with back pain and had metastatic bone lesions with failure to diagnose early, even after multiple visits to the hospital. It was quite surprising that the patient had osteolytic lesions, causing severe destruction, and yet, was mobile. We have not encountered a patient presentation with such advanced lesions and are still mobile in the literature. We tried to emphasize that advanced age is a red flag for low back pain. In addition, it should be kept in mind that the neurologic examination may be normal despite advanced vertebral lesions. Back pain is one of the common reasons for emergency presentation; it is a condition that seriously affects people's daily activities and comfort [1]. Our patient visited health care facilities frequently despite taking his analgesics properly. During the last days preceding the last visit, he had walking difficulties affecting his daily routine. Low back pain is often defined as nonspecific or mechanical low back pain and constitutes 90% of the cases. Usually, the condition is self-limited and resolves within 4 to 6 weeks [3]. Rarely, patients may have serious pathologies, and critical diagnoses are often missed at the first presentation because of cognitive errors, lack of knowledge, and overlooked signs and symptoms [3]. Considering the frequency of patients presenting with back pain, it is necessary to comprehensively evaluate patients with lumbar complaints to keep patients with overlooked serious pathology to a minimum. The alarming signs should be figured out, and a detailed systemic investigation and examination should be carried out. Failure to notice these symptoms promptly can lead to a poor patient outcome. Getting a comprehensive history is particularly important in this stage. Our patient had history of liver cirrhosis post hepatitis B with no follow up for three years.

This detail in history should alert the treating physician to consider further investigation considering the well-known risk of hepatocarcinoma in cirrhotic patients [6]. A complete physical examination following this will guide clinicians in recognizing the danger signs [7]. For this purpose, red flag scanning methods have been developed. While taking the history, age, history of surgery, trauma, immunosuppression, intravenous drug use, and sexual dysfunction should be questioned. In addition, the patient should be asked about any history of fever, anticoagulant use, urinary retention, epidural injection, decrease in anal sphincter tone, lower extremity motor weakness, and saddle anesthesia [8]. Serious pathologies can be revealed from the patient's history or by identifying abnormal musculoskeletal systems and abnormal neurological examination findings. In general, progression, change in character, or persistence of symptoms are alarming and may indicate serious pathology [8]. The presence of acute back pain in patients under the age of 18 or over the age of 50 should be a cause of concern. In young patients, congenital defects, spondylolysis, or vertebral fractures may be the cause of low back pain [9]. In patients over 50 years of age, new-onset back pain may be associated with intra-abdominal processes such as tumor, infection, abdominal aortic aneurysm, pancreatitis, or kidney stone. Osteoporosis accelerates with age progression. The decrease in the strength of bone tissue with osteoporosis may cause fractures in the bone tissue without trauma or with minor traumas. These fractures can be in the whole bone tissue as well as in the vertebrae. Therefore, vertebral fractures should be investigated in elderly patients presenting with acute onset low back pain. In addition, malignancy and metastatic bone lesions can be seen in both adolescents and the elderly, the presence of night pain and weight loss together with back pain requires investigation for malignancy [10]. Bone metastases are much more common than primary bone cancers, especially in adults [5]. Once cancer has spread to the bones, it is rarely curable, but treatments are used to slow the progression of the disease. Bone metastases may be osteolytic, osteoblastic, or mixed [5].

Our patient had extensive osteolytic lesions, interestingly, his physical exam was reassuring and did not identify any neurological compromise. However, he had walking difficulties but was still ambulating with walking aid despite the extensive pelvic lesions with pathological fracture. This could be explained by the fact that body movement is multifactorial and does not depend only on bone integrity. Interactions between bones, muscles and joints play a major role in maintaining movements including the capacity of walking [11]. Osteolytic metastases are characterized by osteoclast-mediated destruction of normal bones. The main malignancies in which osteolytic metastases are seen are multiple myeloma, renal cell carcinoma, melanoma, non-small cell lung cancer, non-Hodgkin lymphoma, thyroid cancer, and Langerhans cell histiocytosis [12]. Osteoblastic metastases are characterized by new bone deposition. The main malignancies are prostate cancer, carcinoid, small cell lung cancer, Hodgkin lymphoma, or medulloblastoma [13]. Mixed metastases are malignancies in which both osteolytic and osteoblastic lesions are seen. The main causes are breast cancer, gastrointestinal cancer, and squamous cancers [14]. Bone metastasis in hepatocarcinoma are predominately osteolytic like in our case report, however osteoblastic or mixed lesions are possible [15]. Uncomplicated acute lower back pain and/or radiculopathy of less than six weeks is considered a self-limiting and benign low back pain and does not require any imaging studies. However, further investigation should be carried out to determine if malignancy or infection is suspected clinically by red flags or pathological markers. In the presence of severe, progressive neurological deficits, diagnostic imaging, and laboratory tests are recommended to guide treatment. Although the systemic examination is completely normal, initial investigation efforts should begin with X-ray, metastases and malignant tumors come to mind, especially if bone lesions are seen in advanced ages. For this reason, the age of patients with suspected bone tumors or metastasis at the time of presentation is of great importance [16]. For elderly patients with persistent back pain and advanced bone lesions, a comprehensive treatment plan is essential. Medications such as bone-building drugs (e.g., bisphosphonates), pain medications, steroids, hormone therapy, and chemotherapy play a crucial role in managing symptoms and reducing pain [6]. Radiation therapy, including intravenous radiation for multiple bone metastases and external beam radiation for localized pain relief, is also recommended [14]. Surgical interventions, such as curettage and bone grafting for benign lesions, marginal resection or wide resection for aggressive lesions, and minimally invasive spine stabilization for spinal involvement, are important treatment options [8]. Palliative care techniques, like percutaneous cryoablation and embolization, help manage pain and improve quality of life [14]. Early diagnosis through imaging techniques like X-rays, CT scans, and MRIs, along with a multidisciplinary approach and patient education, is vital for effective management and improved prognosis [16].

CONCLUSION

This case highlights the need for thorough evaluation in elderly patients with persistent back pain, especially when standard treatments fail. Despite extensive bone lesions and fractures, the patient's mobility was preserved, stressing the importance of considering malignancy, even with a reassuring physical exam. Physical exams can appear normal despite advanced lesions, hence a low threshold of suspicion for serious conditions like bone metastases should be maintained especially in elderly patients. Comprehensive diagnostic workups, starting with X-rays and progressing to CT scans, MRIs, and lab tests, are crucial for early detection and management, enhancing symptom control and overall prognosis.

FIGURE 1 - Pelvic X-ray.

Absence of right pedicle of lumbar (L4) vertebra (Black arrow), destruction of bilateral pubic rami and ischial tuberosity, a large pelvic bone lytic lesion accompanied by a secondary pathological fracture (small white arrows), as well as a large soft tissue component eroding the adjacent part of the sacrum (long white arrow).

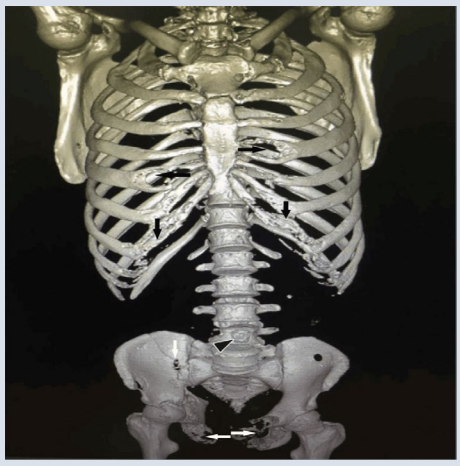

FIGURE 2 - CT-SCAN.

Thoracolumbar and pelvis computed tomography (CT) showed multiple lytic lesions in the anterior ribs (black arrows). Bilateral pelvic bones multifocal lytic lesions with pathologic fractures are seen (white arrows), osteolytic lesion with absence of right pedicle of lumbar (L4) vertebra (arrowhead).

FIGURE 3 - MRI.

Magnetic resonance imaging (MRI) of the spine showed multiple expansile osteolytic lesions throughout the axial skeleton, including the thoracic and lumbar vertebrae. A significant expansile lesion affecting the posterior neural element of the T3 vertebra, with an intraspinal epidural soft tissue component, is compressing the posterior aspect of the upper thoracic cord (indicated by a white arrow). Additionally, another expansile lesion in the T6 and T7 vertebrae, with a substantial soft tissue component, is entirely occluding the neural canal (indicated by a black arrow).

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Author contributions

All authors contributed equally and validated the final version of record.

Declarations

Conflicts Of Interests

The Authors declare that there is no conflict of interest.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Registration

No registration applicable.

Data availability statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Ethical approval

Ethical approval for this study was not required.

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