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Case Report

Hip pain as a manifestation of dialysis-related amyloidosis

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Dialysis-related amyloidosis is a rare clinical condition, which occurs secondarily to the deposition of amyloid fibrils in the osteoarticular structure, and is a systemic complication in hemodialysis patients. It often causes pathological fracture which is important to make a differential diagnosis in atraumatic patients. We reported that a 68-year-old woman was sustained left hip for 1 month with no history of trauma. The radiograph showed a radiolucent lesion in the head and neck of the left femoral. The definite diagnosis was made following further imaging studies and tissue proof. X-rays are a good choice for an initial examination, recognizing the radiolucent lesion helps us determine the next step.

Keywords: hip pain; dialysis-related amyloidosis; magnetic resonance imaging

1. Introduction

Hip pain is a common complaint in the emergency department (ED). Etiologies range broadly, including trauma-related or non-trauma. The patient's situation can range from stable to life-threatening. Disposition also varies from outpatient department (OPD) follow-up to emergency surgery. Patients may easily suffer lifelong disability if they delay treatment. For atraumatic hip pain, emergency physicians should consider several diagnoses, such as stress or occult fracture, avascular necrosis (AVN), arthritis, and psoas muscle abscess. The incidence of pelvic fracture is decreasing, but the overall prevalence still increases due to an aging population. People older than 65 years suffer fractures at a rate of 0.6% per year, a rate that increases to 2% per year for people older than 85 years of age (1).

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2. Case Report

A 68-year-old woman with a history of hyperparathyroidism and end-stage renal disease on peritoneal dialysis (PD) for more than 7 years came to the ED with pain in the left hip for 1 month. In ED, she had clear consciousness. Her vital signs were rather stable with blood pressure: 186/81 mmHg, body temperature 36.2°C, heart rate 80 beats per minute, respiratory rate 18 breaths per minute. There was no traumatic injury to the left hip prior to this visit. Physical examination revealed tenderness of the left hip with limit of motion. A pelvic radiograph was obtained (Figure 1) and then a magnetic resonance imaging (MRI) (Figure 2). The patient was admitted after consultation with an orthopedist. Taking into account the imminent pathological fracture and Brown tumor due to a history of hyperparathyroidism, curettage and partial joint replacement were performed. The deposition of amyloid fibrils was confirmed by a surgical sample that revealed a positive result of Congo red staining (2). She recovered well and was discharged 5 days later.

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Figure 1. Radiograph of the left hip showed a radiolucent lesion in the head and neck of the left femur (white arrows).

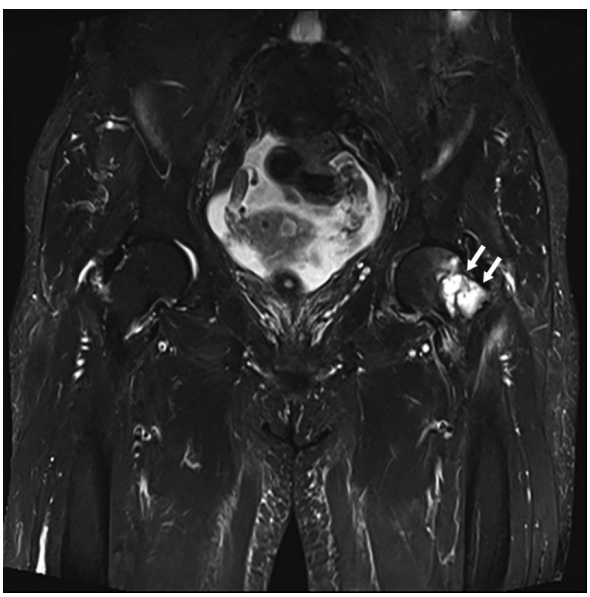


Figure 2. T2-weighted magnetic resonance imaging demonstrated an osteolytic lesion in the left femoral head and neck (white arrows).

3. Discussion

Dialysis-related amyloidosis (DRA), which occurs secondarily to the deposition of amyloid fibrils consisting of beta2-microglobulin (beta2-m) in osteoarticular structures and viscera, is a systemic complication in hemodialysis patients. Beta2-m is a component of the major histocompatibility complex that is normally cleared by glomerular filtration (3). The exact prevalence of DRA is unknown since biopsy is rarely performed; two studies revealed a range of 21 to 28% (4, 5). The prevalence decreased with the use of high-flux biocompatible membranes that provided better clearance, but it still increased because the incidence increased with the time on dialysis. Few studies comparing the prevalence of DRA in hemodialysis and PD. DRA primarily affects the osteoarticular system, resulting in erosive and destructive osteoarthropathies (6). Massive amyloid deposition can develop especially in patients undergoing long-term hemodialysis (7, 8). The symptoms of DRA are often related to the site of deposition; most patients suffer from pain, tenderness, and pathological fracture due to a bone cyst. Compared to brown hyperparathyroidism tumor, the beta2-m amyloidosis bone cyst of beta2-m amyloidosis enlarged more rapidly.

DRA should be considered in the dialysis patient with characteristic clinical and/or radiographic characteristics. Conventional radiography is used for the screening or initial diagnosis and reveals radiolucent lesions or bone cysts. Subsequent Computed tomography (CT) or MRI is generally useful for evaluating the extent and distribution of the bones and joints involved in DRA. Amyloid deposits are often low signal on T1- and T2-weighted images, which is most helpful in pointing out this entity. T2 signal in the intervertebral disc space is occasionally high, but usually not as high as in infected spondylitis. In our case, the T1 image is low signal, while the T2 image is low signal (6). Biopsy is the "gold standard" diagnostic tool for diagnosing DRA to detect Beta2-m. Congo red, the amyloid exhibiting apple-green birefringence under polarized light. The differential diagnosis includes bursitis, calcific periarthritis, and septic arthritis.

In conclusion, it is important for emergency physicians to pay attention to patient complaint of atraumatic hip pain, especially with a history of dialysis. When the history is taken in detail with a careful physical examination, the pathological fracture may be vulnerable. X-rays are a good choice

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for an initial examination, recognizing the radiolucent lesion helps us determine the next step. Finally, the definitive diagnosis of DRA is biopsy.

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