

Bilateral impacted femoral neck fracture in a renal disease patient

Pramod Devkota, Shiraz Ahmad

Department of Orthopaedics and Trauma Surgery, Suri Seri Begawan Hospital, Kuala Belait, Brunei Darussalam

ABSTRACT

Spontaneous bilateral femoral neck fracture in a renal disease patient is not common. We report a case of 47-year-old female patient with chronic renal failure and on regular hemodialysis for the past 5 years who sustained bilateral impacted femoral neck fracture without history of trauma and injury and refused any surgical intervention. The patient was mobilised on wheel chair one year after the fractures. The cause of the fracture and the literature review of the bilateral femoral neck fracture in renal disease are discussed.

Key words: Chronic renal failure, dialysis, neck of femur fracture

Address for correspondence:

Dr. Pramod Devkota,
Department of Orthopaedics and
Trauma Surgery,
Suri Seri Begawan Hospital,
Kuala Belait, Brunei Darussalam.
E-mail: devktoap@gmail.com

INTRODUCTION

Bilateral femoral neck in a renal disease patient is a rare condition and there is paucity of reports in the literature. Large series of bilateral neck of femur fractures have not been reported in the literature and only few cases are reported.¹⁻³ The possible reasons of fracture that have been identified are trauma, osteoporosis and seizure.⁴⁻⁶ Renal disease encompasses a number of skeletal abnormalities, including osteitis fibrosa osteomalacia, hyperosteoridosis, osteosclerosis and several types of developmental problems in children.⁷ Although the occurrence of fractures in patients with these abnormalities has been established, femoral neck fracture is very uncommon.⁸

CASE REPORT

A 47-year-old female was referred to the Orthopaedic Surgery and Trauma department because of pain in both groin and hip region while going for regular hemodialysis for her renal problem. She has been diagnosed as having diabetes mellitus (DM), hypertension (HTN) 10 years previously and was diagnosed as having chronic renal failure (CRF) 8 years back and has been receiving hemodialysis three times a week for the past 5 years.

Consent from the relevant authority and from the patient was obtained to publish the case.

There was no history of injury, trauma, fall, seizure, steroid medication, fluoride treatment, smoking and alcohol abuse. On physical examination there was no active bilateral motion of the hips and very painful on passive movement. Pelvic radiograph examination did not clearly show fractures but the shortened neck of femur was seen and suggesting femoral neck fracture. The routine blood examination showed that she had moderate anaemia and serum urea was 17.6 mmol/L (normal value: 2.5-14.5), creatinine was 401.02 umol/L (normal value: 50.4-98.1), calcium total was 2.39 mmol/L (normal value: 2.10-2.55), phosphate inorganic was 1.07 mmol/L (normal value: 0.74-1.52), vitamin D was 53.48 pmol/L (normal value: 60-108) and para-thyroid hormone level was 105.37 ng/L (normal value:10-65).

Computed tomography (CT) of pelvic [Figure 1] was performed and showed the impacted bilateral fractures of neck of femurs with minimal right varus angulation. Multiple vertebral bodies' collapses are also present with severe and diffuse reduction in mineralization. Gibbous deformity present due to the fractures of vertebral bodies of (thoracic spine) T6, T7, T8, T10 and (lumbar spine) L1. Bilateral hydro-nephrosis and thickening of the bladder wall were found on abdominal ultrasonography.

The patient and relatives were educated on the possible complications of the treatment of bilateral femoral neck fracture and they decided not to go for any surgical intervention. She was not able to walk and mobilised on wheel chairs only. After one year of bilateral femoral neck fracture, she is still alive and on regular dialysis with wheel chair mobilisation.

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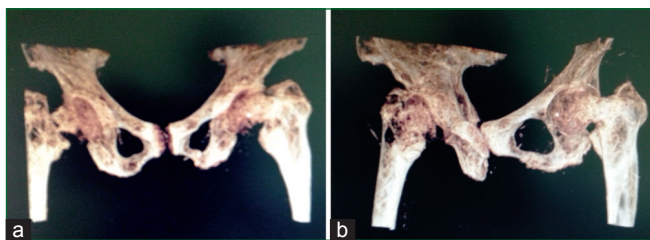


Figure 1a and b: CT showing bilateral impacted neck of femur fracture

DISCUSSION

Osteodystrophy develops in most patients with CRF.⁹ With the availability of hemodialysis service, patients with CRF live longer and the incidence of bone disease increases and renal transplants have reduced the incidence of osteodystrophy.^{1,10,11} Renal transplantation has its own drawbacks such as increased rates of osteonecrosis due to steroid and immunosuppressive therapy.^{12,13} The osteodystrophy occurs in patients with glomerular failure, it begins with failure of filtration, which results in phosphate retention.¹⁴ The combination of diminished tubular filtration and increased serum phosphate concentration causes a decrease in 1,25 dihydroxy vitamin D synthesis. These changes and the increase in the amount of phosphate in gastro-intestinal cell cytoplasmic matrix cause a significant decrease in calcium absorption from the gastro-intestinal tract.¹⁴ Very little calcium is absorbed despite adequate oral intake of calcium and vitamin D. The profound reduction in serum calcium promotes a marked secondary hyperparathyroidism, usually a clear-cell hyperplasia affecting all the four glands.^{14,15} The serum calcium level raises partially to near normal values at the expense of bone and the increase in ionic calcium places the patient at risk for ectopic calcification and ossification by exceeding the critical solubility product for CaHPO_4 .^{14,15} This type of calcification occurs in the conjunctiva, the blood vessels, the skin and the peri-articular tissues.^{14,16} Severe nutritional osteoporosis may develop in some of the patients who are very ill and undernourished.¹⁶

This is a case of an adult with renal disease for the past 8 years and on hemodialysis for the past 5 years. The cause of osteopenia is due to CRF, which cause spontaneous bilateral femoral neck fractures. The patient also had osteoporotic fractures of several vertebral bodies. Patient and relative refused surgical treatment of fracture and patient is still alive one year after the fractures, however, the literature show high mortality rates for such patients.^{3,17}

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