Case Report

Aggressive presentation of multiple myeloma as renal failure and pathological fracture of dorsal vertebra in a young patient: a rare case report

Kalita LK[1], Kalita C[2], Gogoi PK[3] ,Sarma UC[4]

[1]Dr Lohit kumar Kalita , MS, Assistant Professor, Department of Oncology, [2]Dr Chayanika Kalita, Assistant Professor, Department of Dermatology, [3]Dr Pabitra Kumar Gogoi, MD, Professor & HOD,(Rtd)., Department of Clinical Hematology[4]MD, [4]Dr Umesh Ch. Sarma Vice-Chanchellor, Srimanta Sankadeva University of Health sciences, Narakasur Hill Top, Guwahati Assam. All are affiliated to Gauhati Medical College & Hospital, Guwahati, Assam,

Abstract

Multiple myeloma presenting with acute renal failure with dorsal vertebral fracture is extremely rare phenomenon. Renal failure in multiple myeloma is associated with Light chain myeloma, serum creatinine more than 4mg/dL, extensive proteinuria and early infections. Our patient was a 29 -year-old male with multiple poor prognostic factors for renal failure. He presented with sudden onset pain in the backbone with weakness of lower extremities and loss of bowel and bladder control. On neurological examination – power of lower extremities was 4/5 with sign of sensory deficit at below umbilicus. He was diagnosed as lamda type nonsecretory multiple myeloma. He was started with malphalalan-prednisolone regimen but succumb to his disease process after one week.

Key words: Multiple Myeloma, Renal Failure, Complication of Multiple Myeloma

Introduction

Renal failure is commonly seen in elderly people with multiple myeloma which is associated with poor prognosis [1]. The pathology of the renal failure in multiple myeloma is heterogeneous [2]. It is most often associated with immunoglobulins, especially free light (kappa and lamda) chain deposition [3]. These free light chain when get deposited in kidney it can cause broad spectrum of renal lesions where myeloma cast nephropathy is the most common. Incidence of pathological fracture of dorsal spine as presenting feature of multiple myeloma in older age group is 5% while in young patient is extremely rare. Here we present a case of multiple myeloma in a 29 years old young boy presenting with acute renal failure with vertebral fracture followed by sudden death bearing renal failure as the poor risk factor. As depicted by several studies, that multiple myeloma is a very rare cancer in 30 years of age [4,5,6,7]. In view of the above facts my case is a rare one and so unique for reporting.

The Case

The 29 years old young male patient with no significant past medical history presented with severe sudden onset pain in the backbone with weakness of both lower limbs from last 2 days without any preceding history of trauma and he was unable to bear weight which was followed by partial loss of bladder and bladder control. He has history of recurrent respiratory tract infection, difficulty in respiration, dyspnoea and palpitation on exertion, generalized weakness, easy fatigability, loss of appetite for last two months. On examination he was dehydrated and has pallor, bilateral decrease in breath sounds, generalized bony tenderness, bilateral renal tenderness, non-tender mild hepatomegaly. On neurological examination – power of both lower extremities was 4/5. Sensation of both lower limbs was decreased up to bellow the umbilicus. Reflexes of lower limbs were diminished. Rectal examination showed decreased anal sphincter tone. Patient was immediately started on corticosteroid for suspected cord compression. Laboratory investigation revealed hemoglobin 4.4gm/dl (14-16), blood urea 174.50 mg/dl (19.26-42.80 mg/dl), Serum creatinine 13.16 mg/dl (0.66-1.25), calcium 10.05 mg/dl (8.4-10.2 mg/dl), potassium 5.3 mmol/L(3.5-5.1), Phosphorous 7.8 mg/dl (2.68-4.5), urine for bence jones protein- not detected, 24 hours urine protein 1274 mg/24 hours (24-141), Beta 2 microglobulin 3.96 mg/L (0.81-2.19 mg/L), HBsAg/Anti-HCV nonreactive, HIV1& 2 nonreactive and 1+ albumin on urine analysis. Serum protein electrophoresis was normal (Figure-3), serum kappa light chain 14.80mg/L (3.30-19.40), lamda light chain 3310 mg/L (5.71-26.30),

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kappa lamda ratio 0.004 (0.26-1.65). Bone marrow aspiration examination showed 70% of plasma cells (Figure- 4). Radiological investigation multiple lytic areas of spine, skull and pelvic bones on X-ray (Figure 1), bilateral paracardiac opacities on chest X-ray, bilateral renal parenchymal changes in both kidneys with mild ascites, CT scan of lumber spine was suggestive of multiple myeloma with compression of D11 vertebra (Figure-2), HRCT & CECT Thorax study revealed patchy subsegmental airspace consolidative opacities in the bilateral lower lobar postero-basal segmants, right medial-basal and left lingular segments with minimal bilateral pleural effusion. ECG was normal. The patient was diagnosed as lamda variant nonsecretory multiple myeloma. He was started with malphalalan prednisolone regimen and he expired within one week.

Discussion

Multiple myeloma is a malignant disorder characterized by the proliferation of monoclonal plasma cells [7]. The peak incidence of multiple myeloma is in the seventh decade [4]. Incidence of multiple myeloma is vary rare in patients younger than thirty years as evident on several studies [4,5,6,7]. Multiple myeloma in the young has an atypical clinical presentation with multiple or solitary extra medullary plasmocytoma and osteolytic lesions, but low serum or urinary monoclonal M proteins, and few or no plasma cells in the bone marrow [6,7]. But in our patient we observed massive generalised radiolucent lytic areas of bone without associated plasmacytoma, high plasmacytosis in bone marrow and no M band on serum protein electrophoresis. The clinical behavior of multiple myeloma in adolescents and young adults has been suggested to be more indolent [8, 9]. In contrast, in case of our patient clinical behaviour was different. It presented with acute renal failure and vertebral fracture which is aggressive mode of presentation. In addition our patient presented with acute renal failure which is very rarely seen in multiple myeloma in a young patient. Renal function impairment is a well known complication of multiple myeloma. As per the study conducted at Mayo clinic revealed renal function impairment and hypercalcaemia in 30% and 20% of the patients, respectively [7]. In our patient, there was an evidence hypercalcaemia, and renal impairment requiring demanding urgent renal dialysis. Similarly Lazarus et al. reported two cases of plasma cell myeloma in young patients [9]. One was a case of multiple myeloma involving the skull and ribs in a 23-years old young woman & other was a solitary myeloma of the tibia in a 21-years old young man. Both the cases were diagnosed case of of non-secretory multiple myeloma. Our patient had high concentration of serum Lambda light chain with a positive Bence Jones protein (BJP) in urine. However, only the report by Blade et al. BJP was found in 5 out of 10 patients. [7] Literature review suggests that there may be an associated extramedullary component in most of these patients which was not observed in our patient. In India, Geetha et al. described two young patients (20 years, 18 years) who presented with extradural cord compression, lytic bone lesions and bone marrow plasmacytosis [10] which was observed in our patient. The median duration of survival of patients with multiple myeloma ranges between 2 - 3 years. In the study from Mayo clinic, the median duration of survival of the patients was 87 months. The survival of the younger patients was considerably longer than that of patients of all ages with multiple myeloma [6]. These results support the beneficial effect of a very young age on survival in patient with myeloma. In contrast, our patient died within one week of starting treatment. In general, Spinal cord compression is caused by primary involvement of the vertebral body with tumor extension into the adjacent spinal canal [11]. Here, Spinal cord compression following vertebral compression fractures or vertebral plasmacytomas comprises 5% of the presentations of multiple myeloma in older age group while extremely rare in young patients [12]. Our patient falls in this rare entity.

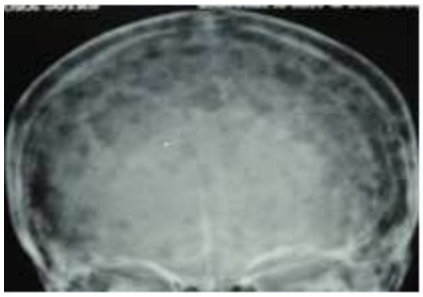

Fig1: Multiple radiolucent lytic areas of skull

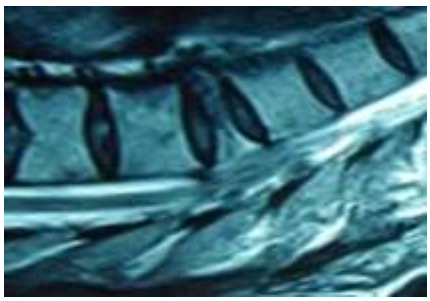

Fig 2: Wedge compression fracture of D11 vertebrae compressing the cord

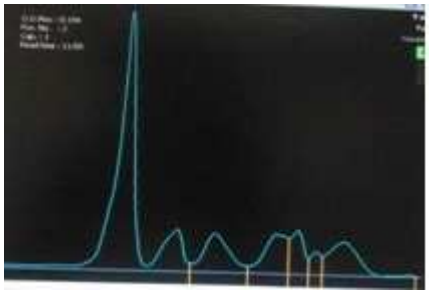

Fig 3: Normal serum protein electrophoresis

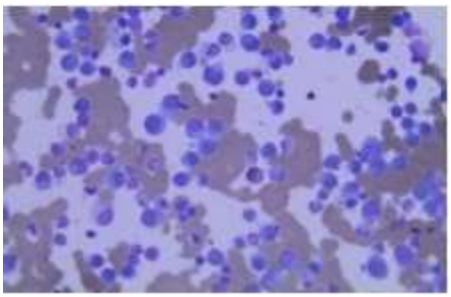

Fig 4: Profuse amount of plasma cell in bone marrow

Conclusion

In conclusion, this report illustrates that multiple myeloma should be kept as differential diagnosis in young patients, even though it presented as acute renal failure or vertebral fracture.

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