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Active Multiple Myeloma in β-Thalassemia: A Case Report

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INTRODUCTION

Thalassemia is an inherited genetic disorder affecting the hemoglobin synthesis. It ranges from asymptomatic carriers to individuals with non-transfusion-dependent thalassemia (NTDT) to those who require regular transfusions for transfusion-dependent thalassemia (TDT). Research on the relationship between thalassemia and malignancies is currently lacking, with limited published case reports and data mainly from multi-center studies

BACKGROUND

Thalassemia, a complex inherited hematologic disorder, presents in various clinical forms, each characterized by unique pathological features. In addition to an imbalanced α/β-globin chain ratio, the disease is marked by ineffective erythropoiesis, chronic hemolysis, and the accumulation of iron, leading to potential multi-organ damage[1].
Multiple myeloma (MM), a clonal plasma cell malignancy, accounts for approximately 10% of hematologic malignancies and typically manifests at a median age of 65 years[2,3]. Although the association between thalassemia and hematologic malignancies is still in its nascent stages, further exploration of this field and the conduction of large-scale studies with long-term follow-up are crucial.

AIM

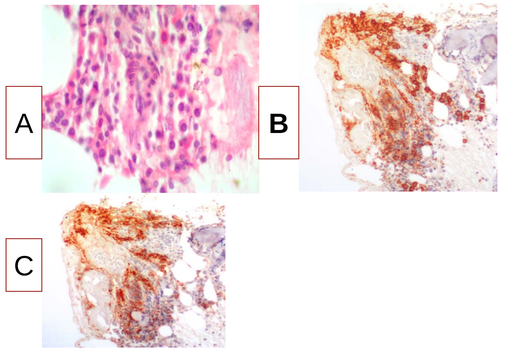
We describe a β-thalassemia (NTDT) patient who experienced acute renal injury due to active multiple myeloma.

CASE REPORT

A 59-year-old man identified as NTDT presented to a hematology outpatient clinic with abrupt -onset progressive anemia along with mild derangement of renal function tests. A physical examination displayed pallor and jaundice. A complete blood count revealed a total leucocytic count: 5.4 × 10^9/L, Hemoglobin: 6.7 g/dL, mean corpuscular volume: 68.4.1 fl, Platelets: 206 × 10^9/L, and serum creatinine: 2.46 mg/dl. The patient received one unit of packed red blood cells. However, despite optimal supportive care, the serum creatinine levels increased to 8 mg/dl and subsequently to 15 mg/dl one week later. As a result, hemodialysis was initiated, and the patient has undergone a total of 7 sessions. Concurrently, a total protein level was 9.1 g/dl, and serum protein electrophoresis showed a monoclonal band in the gamma region of 42.5%, with clonality at IgG heavy chain and lambda light chain.
The bone marrow examination indicated the presence of 12% plasma cells. Flow cytometry analysis revealed abnormal plasma cells expressing CD38, CD138, dim CD81, dim CD27, dim to negative CD45, CD117, and CD56 with kappa restriction. Subsequent bone marrow biopsy disclosed 20% plasma cells, positively stained for CD38, CD138, and CD56 by immunohistochemistry. Additionally, cytogenetic analysis exhibited a positive t(4:14). The treatment commenced with Daratumumab, Bortezomib, thalidomide, and dexamethasone. The patient demonstrated a complete response following 4 cycles of therapy The patient is strongly advised to continue the therapy until autologous stem cell transplantation is performed.

SUMMARY

A 59-year-old male patient, known as NTDT, presented with sudden-onset progressive anemia and mild renal function abnormalities. Despite supportive care, the renal function continued to deteriorate, leading to the initiation of hemodialysis. Further investigations revealed active multiple myeloma and a positive t(4:14) cytogenetic analysis. The patient underwent treatment with Daratumumab, Bortezomib, thalidomide, and dexamethasone (DVTD), resulting in the achievement of a complete response. The current recommendation is to continue the therapy until autologous stem cell transplantation is feasible.



A: Infiltration of bone marrow by interstitial clusters of plasma cells.**B:** CD 138 positive membranous staining in neoplastic plasma cells .**C:** CD 56 positive membranous staining in neoplastic plasma cells .

DISCUSSION

The link between thalassemia and hematologic malignancies has been the subject of investigation in two large-scale cohort studies, both of which have indicated a heightened risk compared to the general population[4,5]Numerous potential predisposing risk factors are known to be associated with the development of cancer in patients with thalassemia, however the mechanism behind cancer development in thalassemia patients remain elusive and, requiring further studies for early diagnosis and management. Screening for malignancy should be performed when overlapping symptoms such as anemia, fatigue, and splenomegaly are present.

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