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CASE REPORT

Persistent Mild Anemia and Hypercalcemia were Ignored as Normal Reaction Secondary to Oral Calcium Supplementation in a Steroid-Dependent Asthma Patient Ultimately Diagnosed as Multiple Myeloma: a Case Report and Literature Review

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SUMMARY

Background: **Anemia can be secondary to many diseases and hypercalcemia can be secondary to oral calcium supplementation. For non-hematologists, anemia and hypercalcemia are usually ignored. Here we report a case of persistent mild anemia and hypercalcemia which were ignored as a normal reaction secondary to oral calcium supplementation in a steroid-dependent asthma patient; it was ultimately diagnosed as multiple myeloma.**
Methods**: Bone marrow puncture, combined serum, and urine laboratory indexes were performed for diagnosis.**
Results: **A bone marrow puncture specimen comprised 31.5% plasma cells. The serum and urine immunoelectrophoresis showed monoclonal kappa light chains.**
Conclusions: **When anemia and hypercalcemia occur in an elderly patient, physicians should pay attention to multiple myeloma, especially when accompanied with vertebral and flat bone fractures.**
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KEY WORDS

anemia, hypercalcemia, oral calcium supplementation, multiple myeloma

CASE PRESENTATION

Multiple myeloma (MM) is a malignant plasma cell disease that localizes to and expands in the bone marrow and produces myeloma cells (MMCs). MM is a genetically and clinically heterogeneous disease, with poor survival, characterized by the accumulation of a monoclonal immunoglobulin, namely monoclonal component (MC) [1,2].

In the present study, we report a case of persistent mild anemia and hypercalcemia which were ignored as a normal reaction secondary to oral calcium supplementation in a steroid-dependent asthma patient; the patient was

ultimately diagnosed as MM. A 79-year-old male patient came to our observation because of recurrent wheezing diagnosed as steroid-dependent asthma. He took oral prednisone (15 mg/day) and oral calcium supplementation (calcium carbonate 750 mg three times a day and calcitriol 0.25 μg/day) for more than 2 years. This was the third time he was admitted to our hospital. His clinical history was characterized by recurrent wheezing and chest pain. In November 2017, due to chest pain, he underwent chest computed tomography (CT) with evidence of osteoporosis of thoracic vertebrae and costal bones, but no evidence of bones fractures (Figure 1A - D). At that time, the blood test showed hemoglobin was 99 to 110 g/L, serum phosphorus and alkaline phosphatase were normal, while serum calcium was 2.18 mmol/L (biological reference 2.02 to 2.6 mmol/L), but no one paid attention to serum calcium and hemoglobin and continued oral calcium carbonate and calcitriol. One week ago, before this hospitalization, he felt nausea, intermittent vomiting and frequent urination and very thirsty. He did not receive any advanced test and treatment. On May 16th, 2018, he felt short of breath and severe chest pain, so he came for help in our department. When he was admitted, he underwent a chest CT and blood laboratory tests. Chest CT rib imaging showed a rib bone fracture (Figure 1E), and blood laboratory tests showed hemoglobin was 95 g/L and serum calcium was 3.26 mmol/L. Comprehensive analysis of characteristics of the symptoms, laboratory, and imaging manifestations led to a diagnosis of MM. Bone marrow puncture was performed for diagnosis. The bone marrow puncture specimen comprised 31.5% plasma cells (Figure 1F). The serum and urine immunoelectrophoresis showed monoclonal kappa light chains (Figure 1G, H).

DISCUSSION

For non-hematologists, anemia and hypercalcemia are usually interpreted by different cause rather than specific manifestations of myeloma. We considered that anemia can be secondary to malnutrition and gastrointestinal occult bleeding due to long term oral prednisone. Hypercalcemia can be secondary to oral calcium supplementation [3-6]. MM is a plasma cell tumor with poor survival, characterized by producing monoclonal immunoglobulin [7]. MM has various clinical features, including pain, bones fractures (vertebral and flat bones are most often affected), biological disorders (including renal failure, amyloidosis, and autoimmune diseases and so on), and tumors [8-10]. The sex-ratio is 70% males versus 30% females between 55 and 75 years [11]. A high blood sedimentation rate, anemia, and hypercalcemia are rather common [12].

In our patient, the first evidence of MM was chest pain. Chest CT with evidence of osteoporosis of thoracic vertebral and costal bones, but no evidence of bone fractures. At that time, the patient had anemia and no hypercalcemia. As MM progressed, elevated calcium occurred and he had nausea, intermittent vomiting and frequent urination and very thirsty due to hypercalcemia. No renal failure or small-vessel occlusions were observed.

Sometimes, the diagnosis of MM at an early stage is difficult when the patient also has other diseases, so comprehensive analysis of characteristics of symptoms, laboratory, and imaging manifestations is extremely important [12]. For this patient, our lesson is that we ignored anemia and hypercalcemia. We considered the abnormal laboratory tests as a normal reaction secondary to the treatment.

CONCLUSION

Though anemia can be secondary to many diseases and hypercalcemia can be secondary to oral calcium supplementation, when anemia and hypercalcemia occur in an elderly patient, non-hematologists should also pay attention to multiple myeloma, especially when accompanied with vertebral and flat bone fractures.

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Ethical Approval:
This study was approved by the ethics committee of North China University of Science and Technology Affiliated Hospital. All procedures performed in the studies were in accordance with the ethical standards. Informed consent was obtained from all individual participants included in this study.

Declaration of Interest:
No conflicts of interest.

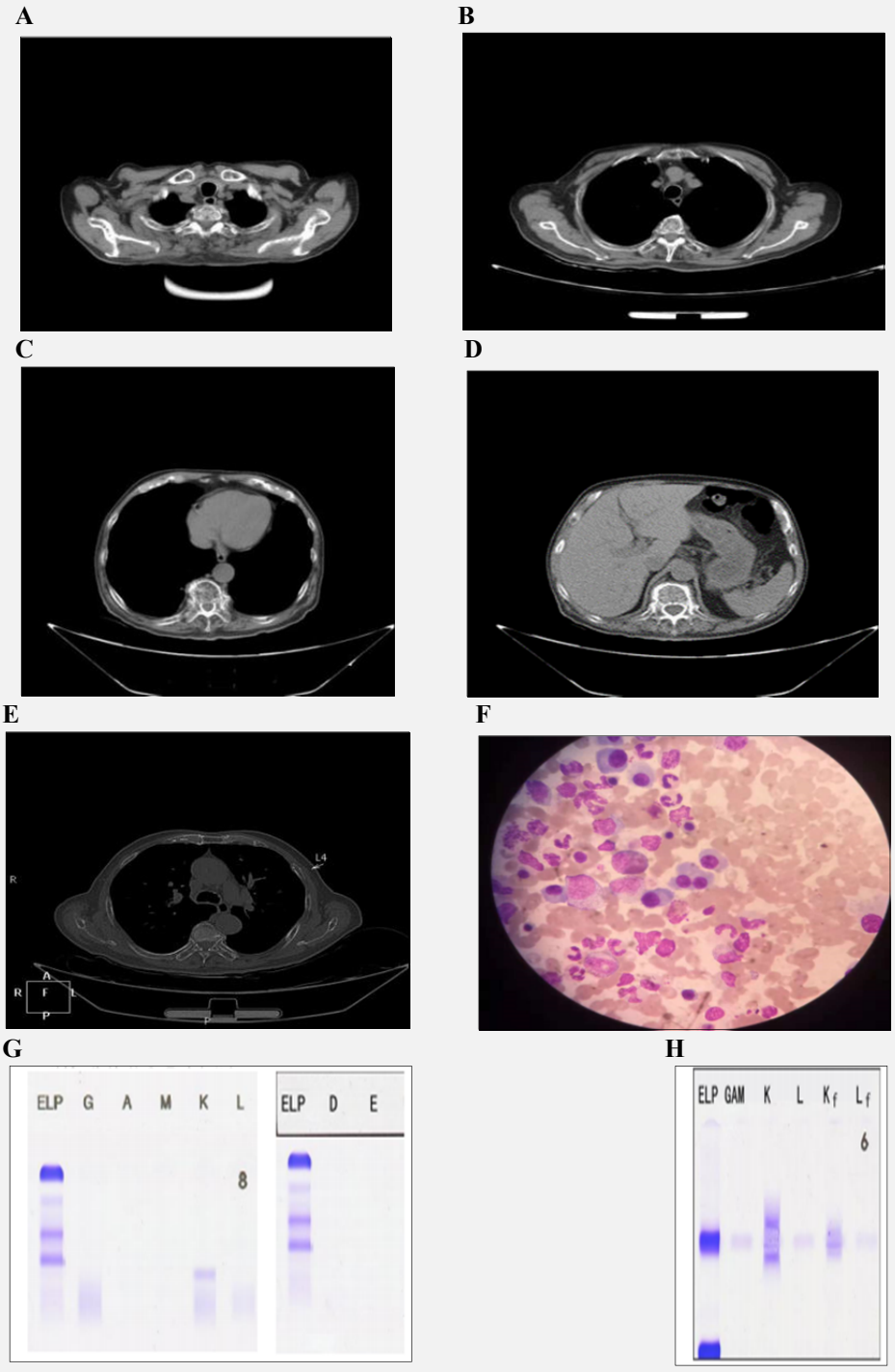

Figure 1. Bone marrow puncture combined serum and urine laboratory indexes:

Chest CT with evidence of osteoporosis of thoracic vertebral and costal bones, but no evidence of bone fractures (Figure 1A - E). Chest CT rib imaging showed rib bone fracture (Figure 1E). The bone marrow puncture specimen comprised 31.5% plasma cells (Figure 1F). The serum and urine immunoelectrophoresis showed monoclonal kappa light chains (Figure 1G, H).

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