Acute Paraplegia an Initial Presentation of Acute Myeloid Leukemia

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ABSTRACT

Unlike acute lymphoblastic leukemia, neurological symptoms are not commonly seen in the presentation of acute myeloid leukemia (AML). Here, we report a case of AML in which the patient's initial symptoms were acute onset of paraplegia and back pain caused by presence of spinal epidural myeloid sarcoma.

Key words: Acute myeloid leukemia, myeloid sarcoma, paraplegia.

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INTRODUCTION

Acute myeloid leukemia (AML) is an uncontrolled clonal proliferation of immature myeloid precursors in peripheral blood, bone marrow, and/or other sites in the body. It is more common in adults. Patients with AML usually present with symptoms related to cytopenia as fatigue and weakness due to anemia, fever and infections due to neutropenia, hemorrhage and petechiae due to thrombocytopenia. These cytopenias occur because of malignant cells proliferation which occupy the bone marrow and suppress normal hematopoietic cells production. On physical examination the patients may found to have pallor, lymphadenopathy, and organomegally.(1,2) Globally, the incidence of AML is approximately 2.5–3 cases per 100,000 populations per year and the incidence of CNS involvement in AML is 7%. (1, 3). Myeloid sarcoma (MS) is an uncommon solid tumor that consists of groups of myeloblasts outside the bone marrow (4). MS typically co-occurs with AML, however, its presence may signify relapse in established AML cases as well as accelerated or blastic phase myelodysplastic or myeloproliferative neoplasms. In rare cases, it may be an initial manifestation of AML even before the bone marrow is involved (5). In our case, MS compressing the spinal cord and causing neurological symptoms to emerge as a rare initial manifestation of AML, which made it a challenging diagnosis.

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CASE PRESENTATION:

A 17-year-old male arrived the emergency of Prince Hashem Military Hospital on May 29th, 2021, with history of back pain and lower limb weakness that had bothered him for a week.

Investigations began with a complete blood count, that revealed anemia with hemoglobin level of 9.3 g/dL, white blood cell count of 7000/μL, neutropenia with absolute neutrophil count of 600/μL, and thrombocytopenia with platelet count of 60,000/μL. The patient had elevated serum lactate dehydrogenase level. Moreover, a thoracic mass was seen in his chest X-ray, and the whole spine magnetic resonance imaging showed multiple epidural, paravertebral, and prevertebral soft tissue masses. In correlation with other imaging studies, these findings raise suspicion of the hematological disorder (MS that is associated with AML). Peripheral blood smear was requested, revealed 60% blasts. A diagnosis of AML with t(8;21) was made after bone marrow aspiration, flow cytometry, and cytogenetic studies. The patient underwent T2–T8 laminectomy to excise the spinal cord lesion, which was later identified by pathology report as delete granulocytic sarcoma. Chemotherapy was commenced in order to induce remission. Unfortunately, the patient died within one month.

DISCUSSION:

The most common presentation of AML, including: fever, generalized weakness, and bleeding tendencies, such as epistaxis, petechial rashes, and menorrhagia, due to bone marrow failure and pancytopenia. On examination, patients may exhibit lymph nodes enlargement and hepatosplenomegaly (6). MS is an extra-medullary mass composed of myeloid blasts. It is a rare condition that is most often associated with bone marrow infiltration by blasts. On rare occasions, it may manifest in non-leukemic patients (7). The most common sites of MS are skin, orbit, bone, lymph nodes, gastrointestinal tract, soft tissue, central nervous system, and testes (8). The clinical symptoms of MS result from tumor mass effect or organ dysfunction (9). Our patient presented with back pain and paraplegia resulting from spinal cord compression. Fujikawa et al., reviewed 23 epidural MS cases and found that the most common symptom was back pain. The most common AML phenotype was AML with maturation, which was also the phenotype in our case (10). Prasad et al. reviewed adult patients with malignant spinal cord compression revealed that the vast majority of patients during the initial diagnosis had back pain that lasted for an average of 8 weeks (11). According to Gunes et al., pediatric patients with paravertebral malignancy experience seven weeks median delay between the onset of symptoms and diagnosis (12). Our patient did not experience such a long delay in diagnosis and had a favorable cytogenetic abnormality—t(8;21). Unfortunately, he passed away soon after induction of chemotherapy. The presence of MS is associated with poor overall survival in AML patients (13). It behaves dramatically regardless of symptoms, age, phenotype, and cytogenetic factors (14). MS is difficult to diagnose because of the various sites which can be involved and the broad range of presenting symptoms, especially in patients without leukemic presentation (bone marrow involvement). High rates of misdiagnosis and delayed diagnosis of MS delay the optimum therapy for patients (8). Obtaining a correct diagnosis in of MS and AML in timely manner relies on a combination of high index of clinical suspicion with radiological, cytogenetic, and pathological investigations (9).

CONCLUSION:

We should work to raise awareness among clinical physicians to include MS, although rare, as one of the differential diagnoses of any mass or atypical cellular infiltrate, which would allow for its proper and timely management.

ABBREVIATIONS:

AML	Acute Myeloid Leukemia
MS	Myeloid Sarcoma

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