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Case Report Open Access

Mucormycosis and Hemophagocytosis Syndrome in a Patient Following Acute Myeloid Leukemia

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Introduction

Acute Myeloid Leukemia (AML) is an aggressive malignancy of the white blood cells that leads to symptoms related to bone marrow failure and organ infiltration. Untreated, AML is a universally fatal condition and life-threatening complications can quickly develop in asymptomatic patients.3Patients with AML will initially present in a multitude of ways. Some cases of disease will be discovered on routine blood work while others may present with symptomatic complications such as infection, bleeding or disseminated intravascular coagulation.2Acute myeloid leukemia includes a clinical and genetic heterogeneous group of hematopoietic malignancies that arise as a result of clonal expansion of undifferentiated myeloid precursors in the bone marrow due to genetic abnormalities that impair self-renewal, proliferation and differentiation.

Mucormycosis commonly occurs in immunosuppressed patients with hematological diseases, which can be life-threatening. However, many cases are often misdiagnosed due to lack of specific clinical manifestations.4Mucormycosis, caused by opportunistic pathogenic fungi that belong to the order Mucorales, commonly occurs in immunosuppressed patients with hematological diseases after chemotherapy or hematopoietic stem cell transplantation with a high mortality rate. The use of prophylactic and therapeutic drugs, such as glucocorticoids, immunosuppressant's, and broad-spectrum antibiotics, has become an important pathogenic factor for mucormycosis infection in patients with acute leukemia.

Hemophagocytic lymphohistiocytosis (HLH) is a potentially life-threatening syndrome characterized by an unchecked and persistent activation of cytotoxic T lymphocytes and natural killer (NK) cells. Failure to control the immune response leads to increased secretion of inflammatory cytokines [1-5] and macrophage activation, causing systemic inflammatory symptoms and signs. Clinically, HLH presents a diagnostic challenge because there is no one pathognomonic clinical manifestation or laboratory finding and signs are often nonspecific hemophagocytosis is part of a sepsis-like clinical syndrome caused by severe hypercytokinemia as the consequence of a highly stimulated but ineffective immune response.7Diagnostic criteria include idiopathic fever, splenomegaly, cytopenias, hypertriglyceridemia, hypofibrinogenemia, and the presence of hemophagocytosis.

Case Report

A 59-year-old male patient applied due to low blood values. The patient followed as AML 7+3 treatment protocol has been planned. FLT-3 was positive in the examinations. Months after the patıent received the dıagnosis bone marrow transplantation was planned. Steroid-resistant GVHD develops Figure 1 during the patient's check-up. The patient continuing to be hospitalized. The patient continued to be hospitalized for approximately months. A bıopsy was taken by due to septum anterior perforation. Pathology report conducted as mucor. The patient was taken into surgery. He continued to be intubed in the ICU. Extubation was planned for the patient but he could not tolerate it.

Hemophagocytosis syndrome was detected and the patıent was exitus.

Discussion and Conclusion

Acute Myeloid Leukemia (AML) is an aggressive malignancy of the white blood cells that leads to symptoms related to bone marrow failure and organ infiltration. Untreated, AML is a universally fatal condition and life-threatening complications can quickly develop in asymptomatic patients. Mucormycosis, caused by opportunistic pathogenic fungi that belong to the order Mucorales, is a difficult-to-diagnose rare disease with high mortality that commonly occurs in patients with impaired immune status, particularly those with diabetes mellitus, hematological malignancy, and neutropenia.4It is believed that many of the diseases manifesting as pancytopenia and organ failure with high fever of unknown cause may be HLH. HLH is a phenomenon in which the process of inactivation of the immune system that has been activated by stimulation is impaired; overactive immune cells invade organs, and hypersecretion of cytokines result in organ failure. In adults, it has secondary causes such as infection, tumor, and rheumatism. Diagnostic criteria include idiopathic fever, splenomegaly, cytopenias, hypertriglyceridemia, hypofibrinogenemia, and the presence of hemophagocytosis.

After our patient was diagnosed with AML, chemotherapy treatment started. The patient had entered pancytopenia due to chemotherapy. Patient who developed GVHD after transplantation, the extended duration of hospitalization caused a patient with a low immune system to be mucor. Our patient had both mucor and hemophagocytosis syndrome and both are mortal. Unfortunately he passed away.

Conflict of interest

The authors declare that there is no conflict of interest

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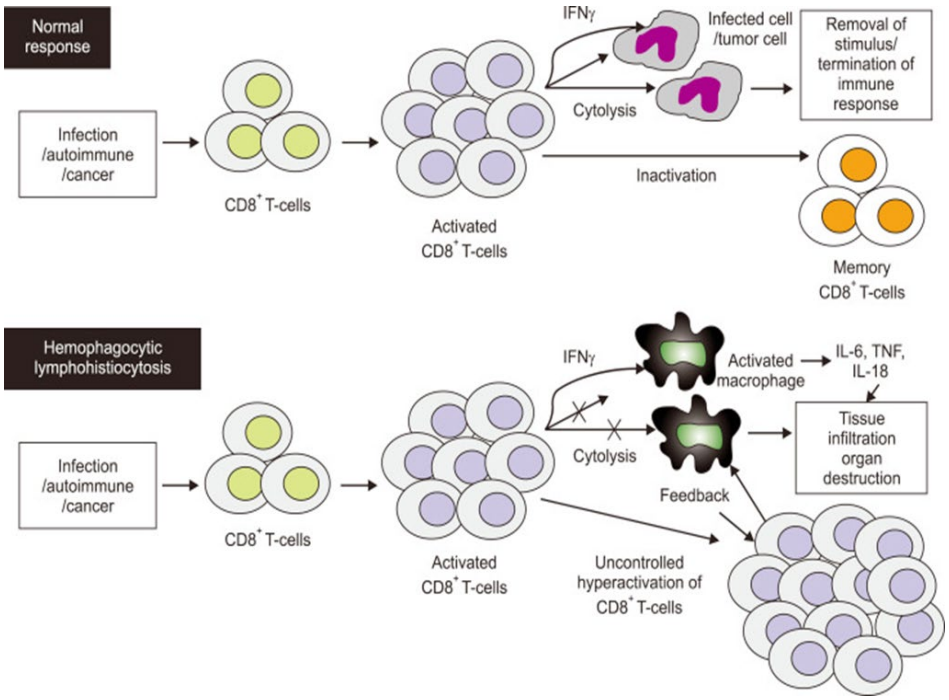

Figure 1: The immunologic response is different between the normal host versus patients with hemophagocytic lymphohistiocytosis.

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