

Role of Gasdermin D as Marker of Pyroptosis in Acute Leukemia

Hanaa Fathey Abdel Samee ^[1], Mostafa Kamal El Razzaz ^[1], Gehad Hamada Fekry ^[1], Fady Sobhy Kamal ^[1], Ahmed Darwish Abd EL-Aziz ^[1]

[1] *Clinical Hematology and Bone marrow transplantation unit, Internal Medicine Department, Faculty of Medicine, Ain Shams University, Cairo, Egypt.*

Corresponding author: *Ahmed Darwish Abd EL-Aziz.*

Phone: 00201112055411.

Email: *ahmeddarwish215@gmail.com.*

ABSTRACT

Background: Leukemia is one of the most common malignant disorders affecting the world population. Globally In 2020, leukemia was estimated to be the 15th and 11th most frequent cause of cancer incidence and cancer-related mortality worldwide with higher prevalence in the more developed countries. However, the mortality rate, is higher in developing countries.

Aim of the Work: The aim of our study is to assess the role of Gasdermin D in Adult Egyptian Acute leukemia patients, and to determine if it has a significance as a sepsis marker and whether it has an influence as a pyroptosis marker on response to treatment and mortality.

Patients and Methods: This study is a prospective case control study that was conducted on newly diagnosed patients with acute leukemia in clinical hematology unit, internal medicine department, Ain Shams university hospital, Cairo, Egypt for six months.

Results: Febrile neutropenia was more frequent in AML patients compared to ALL patients. Inflammatory markers (CRP, Procalcitonin) were significantly higher in febrile group compared to non-febrile group (p value <0.001 for both markers). Median Gasdermin-D level was significantly higher in acute leukemia patients compared to controls (p value <0.001). As a sepsis marker, gasdermin D was significantly higher in patients with febrile neutropenia in comparison to non-febrile patients (p value <0.001) and was positively correlated with both CRP and Procalcitonin (p value 0.001 for both). As a marker of pyroptosis we couldn't find a significant correlation between Gasdermin-D level and response to treatment or mortality (p value 0.35; 0.181 respectively).

Conclusion: Gasdermin D is higher in acute leukemia patients compared to healthy controls. It has a higher level in patients with febrile neutropenia going in hand with other sepsis markers. But as a marker of pyroptosis we couldn't find a significant correlation between Gasdermin-D and response to treatment or mortality.

Keywords: Acute leukemia; Pyroptosis; Gasdermin-D; Sepsis.