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Inflammatory Phenotype Adult AML: Patient Outcomes and Clinical Characteristics

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Abstract

Background

Inflammatory AML (iAML) is an underrecognized presentation of AML, defined here as newly diagnosed AML presenting with elevated Serum Ferritin (SF) and Elevated soluble Interleukin Receptor 2(sIL2r). These markers are associated with poor prognosis in AML and are components of the diagnostic criteria for HLH.

Methods

From November 2025 until July 2026 newly diagnosed AML patients presenting to UAB were screened for iAML, those with SF ≥500 ng/mL and sIL2r ≥x2ULN (ARUP, ULN=858 pg/mL) were considered as having iAML and had additional cytokine analysis performed (Mayo Panel: TNFa, IL6, IFNb, IL10, MCP1, IL1b, IFNy, MIP1a, GM-CSF, sIL2r, IFNa, IL18, pg/mL). SF and cytokines were repeated at end of induction (EOI). Clinical characteristics and outcomes were obtained.

Results

150 patients presented to UAB with newly diagnosed AML, out of which 35 (23.3%) fulfilled initial SF and sIL2r criteria. Median age was 68 years (range 35-85), 60% (21) were male, 82.9% (29) were NHW, 20% (7) had AML-MRC, 11.4% (4) had t-AML and 17.1% (6) had sAML; ELN 2022 was 62.9% adverse, 20% intermediate and 14.3% favorable; with 2.9% with unknown risk. Median Hb at diagnosis was 7.5 (4.6-11.8), PLT were 33K (5K-150K), blasts were 62% (20-97), SF was 1316 ng/mL (509 – 30000 ng/mL) and sIL2r was 3106 U/mL (1716 – 25672 U/mL). 33 patients had mutational data, 33% NPM1, 27% FLT3 ITD, 30% TP53, and 24% TET2. 7 patients had FLT3 ITD and NPM1. 68.6% had fever, but only 20% had a microbiologically confirmed infection, 40% had splenomegaly, 8.6% had evidence of hemophagocytosis, 17% had hypofibrinogenemia, 5.7% had hypertriglyceridemia. 83% fulfilled at least 4/8 HLH-2004 criteria. Relevant median cytokine levels were (ULN): TNFa: 11.7 (<10); IL6: 24.3 (<5), MCP1:187 (<198), IL18:687 (<468). 71% of patients received AML treatment, with the rest receiving palliative therapy: 26% intensive and 46% non-intensive therapy; 37% (13) achieved CRc, 17% were refractory. Out of 18 patients with assessment at EOI, median inflammatory markers were lower in CRc vs Refractory, SF 1411 vs 5961, sIL2r 1227 vs 2618, TNFa 1.03 vs 2.65, IL6 5.65 vs 55.15, MCP1 170 vs 580 and IL18 697 vs 1556. Median EFS and OS were 2.6

and 2.8 months, 11.4% received SCT, cause of dead was AML in 85.7%.

Conclusion

iAML represents a high-risk phenotype of AML patients across multiple mutational subtypes with very high rates of mortality despite modern therapies, which highlights the need for clinical intervention geared towards this population.

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