

CHARACTERISTICS AND OUTCOMES OF PATIENTS WITH ACUTE MYELOID LEUKEMIA ADMITTED TO INTENSIVE CARE UNIT WITH ACUTE RESPIRATORY FAILURE: A POST-HOC ANALYSIS OF THE EFRAIM PROSPECTIVE MULTICENTER STUDY

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Argomento: Insufficienza respiratoria acuta e ventilazione meccanica

Background: Acute respiratory failure (ARF) is the leading cause of intensive care unit (ICU) admission in patients with Acute Myeloid Leukemia (AML). With the improvements achieved in AML therapy, the number of patients requiring intensive support is increasing, and data on prognostic factors affecting short-term outcome are needed.

Methods: This is a post-hoc analysis of a multicenter, international prospective cohort study on immunocompromised patients with ARF admitted to ICU (EFRAIM study). We evaluated hospital mortality and associated risk factors in patients with AML and ARF; secondly, we aimed to define specific subgroups within our study population through a cluster analysis.

Results: Overall, 201 of 1611 immunocompromised patients with ARF had AML and were included in the analysis. Hospital mortality was 46.8%. Variables independently associated with mortality were ECOG PS ≥ 2 (OR=2.79, $p=0.04$), cough (OR=2.94, $p=0.034$), use of vasopressors (OR=2.79, $p=0.044$), leukemia-specific pulmonary involvement (OR=4.76, $p=0.011$) and liver SOFA score (OR=1.85, $p=0.014$). Focal alveolar chest X-ray pattern was associated with survival (OR=0.13, $p=0.001$). Virus was the only diagnosis independently associated with cough (OR=3.15, $p=0.013$), while a microbiological documented gram-negative pulmonary sepsis was independently associated with an alveolar focal chest X ray (OR=4.62, $p=0.003$).

We identified 3 clusters of patients: a "leukemic cluster", comprised of recently diagnosed high-risk AML patients with an isolated, milder ARF; a "pulmonary cluster", consisting of very symptomatic, highly oxygen-requiring, severe ARF with diffuse radiological findings in heavily immunocompromised patients; a clinical "hyperinflammatory cluster", including patients with multi-organ failures in

addition to ARF. When included in the previous multivariate analysis, cluster 2 and 3 were independently associated with hospital mortality.

Conclusion: among AML patients with ARF, factors associated with a worse outcome are patient's background (PS, leukemic burden), symptoms, radiological findings, and additional multi-organ failures. We identified three ARF syndromes in AML patients, which showed a prognostic significance.

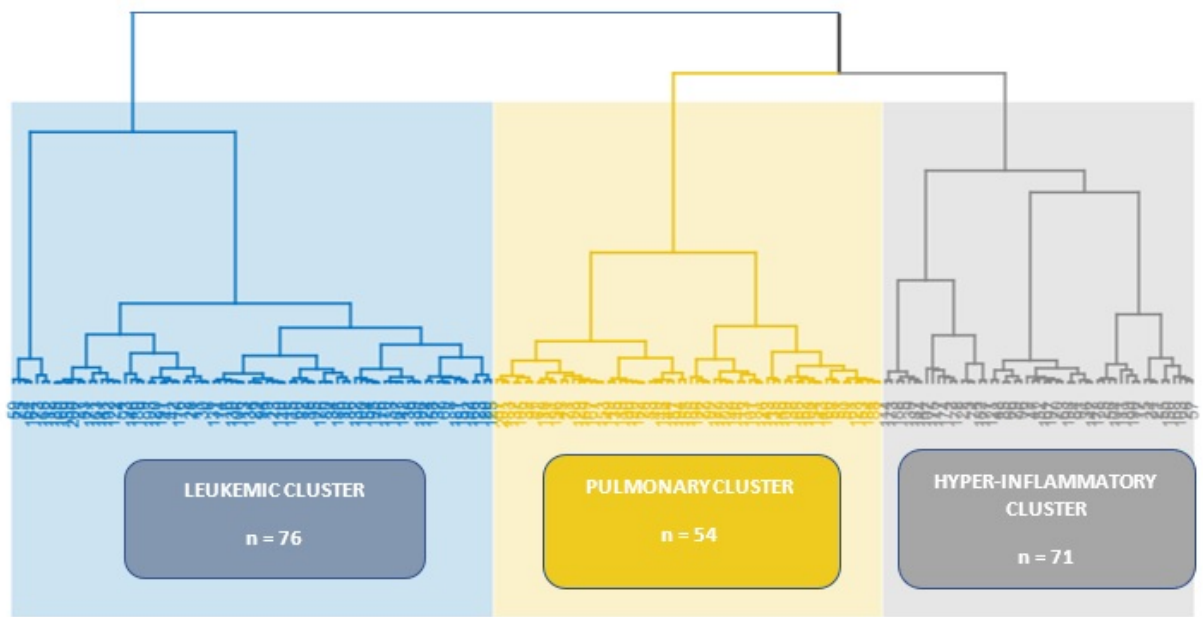


Figure 1: dendrogram showing the hierarchical cluster analysis forming 3 clusters