Quiet (Marrow-Failure-Predominant) Acute Leukemia Following or Concurrent With Solid Tumors: A Single-Center Case Series

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INTRODUCTION

Therapy-related acute leukemias are typically associated with adverse biological features and unfavorable clinical outcomes. However, acute leukemias arising in patients with solid tumors may represent a heterogeneous spectrum with respect to timing, prior treatment exposure, and clinical presentation. Within this spectrum, some cases may present predominantly with cytopenias and low peripheral leukocyte counts, without a marked hyperproliferative peripheral blood picture.

AIM

To characterize the clinical presentation, temporal patterns, and early treatment responses of acute leukemia cases identified during follow-up at our center among patients with a current or previous solid tumor diagnosis, with particular attention to a cytopenia-dominant, low-WBC presentation.

METHOD

We retrospectively reviewed all patients with acute leukemia (AML or ALL) evaluated at the Department of Hematology, Dicle University Faculty of Medicine, between May 2023 and December 2025. Among 86 patients with acute leukemia, those with a current or previous diagnosis of a solid tumor were identified and included in this case series. Clinical characteristics, temporal relationship between the solid tumor and leukemia, prior anticancer treatment exposures, hematologic and molecular features, treatment approaches, early complications, and response outcomes were extracted from institutional medical records and the national e-Nabız health information system. Treatment responses were assessed according to disease-specific standard response criteria.

RESULTS

- Eight patients with solid tumor–associated acute leukemia were identified: 7 AML and 1 ALL; 5 female and 3 male.
- Gynecologic malignancies predominated, including ovarian endometrioid carcinoma (n=2) and ovarian serous carcinoma (n=2).
- Leukemia developed after the solid tumor in 6/8 patients; leukemia-first and synchronous presentations were also observed.
- Prior anticancer exposure included chemotherapy in 6/8, radiotherapy in 2/8, and immunotherapy in 1/8; taxane–platinum was the most frequent chemotherapy regimen.
- Peripheral blood showed a cytopenia-dominant, low-WBC presentation: WBC 0.48–8.86 $\times 10^9$/L, median 3.40 $\times 10^9$/L.
- Among patients with assessable response, CR/CRi was achieved in 6/6. Early complications were limited: TLS 1/7, with no documented ICU admission or DIC in the available records.
- Molecular findings were heterogeneous: TP53 2/8, IDH1 2/8, t(8;21) 1/8; the single ALL case had BCR::ABL1 p210 positivity.

CONCLUSIONS

Acute leukemias occurring in patients with solid tumors showed heterogeneous temporal and biological patterns in this small case series. A cytopenia-dominant, low-WBC presentation was observed across different clinical trajectories, including post-exposure, synchronous, and leukemia-first presentations.

High early response rates were observed among evaluable patients, with a low burden of documented early complications. These findings are descriptive and hypothesis-generating; larger cohorts with longer follow-up are required to determine whether this presentation represents a clinically meaningful and reproducible phenotype.

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