Survival Outcomes in Complex Karyotype AML Stratified by TP53 Mutation Status and Treatment Intensity: A Single-Institution Experience

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BACKGROUND

- Complex karyotype AML (CK-AML) is adverse risk and frequently co-occurs with *TP53* mutations.
- Median overall survival is poor, typically 5–6 months regardless of treatment approach
- Contemporary multicenter data show that neither venetoclax-based nor intensive regimens meaningfully alter outcomes in this population.

OBJECTIVE

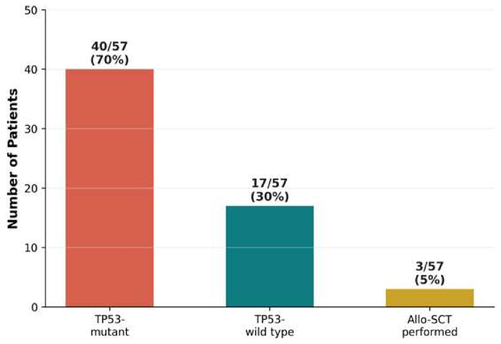
- To evaluate survival outcomes in CK-AML patients, stratified by *TP53* mutation status and treatment intensity, at a single institution.

METHODS

- Retrospective single-center study, Baylor St. Luke's Medical Center, 2013–2025
- CK-AML defined as ≥3 unrelated chromosomal abnormalities
- TP53 status determined by next-generation sequencing
- Primary endpoint: overall survival (OS). Secondary endpoint: CR/CRi rate
- Kaplan-Meier analysis with log-rank testing

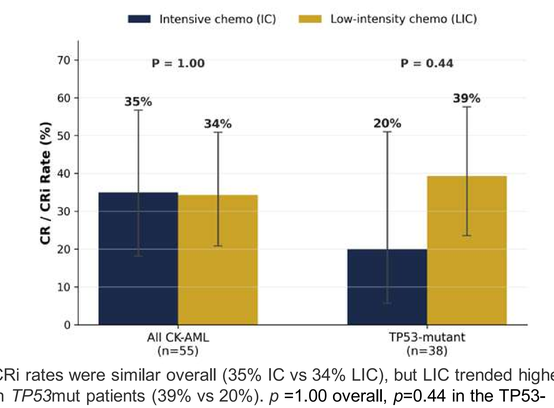
RESULTS — PATIENT CHARACTERISTICS

Table 1: Rates of *TP53* mutation among cohort population



57 were evaluable for *TP53* status. Median age was 69 years; 64.6% were male. Forty patients (70%) harbored a *TP53* mutation (*TP53*mut) and 17 (30%) were wild type (*TP53*wt).

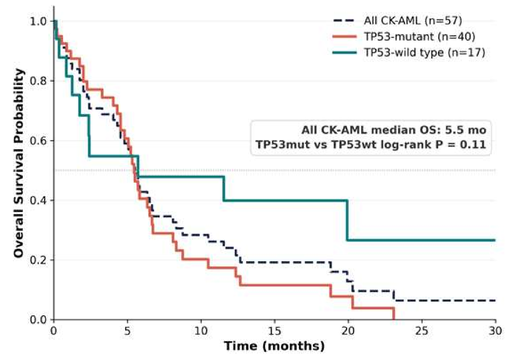
Table 2: CR/CRi rates by treatment intensity, overall and within *TP53*-mutant subgroup



CR/CRi rates were similar overall (35% IC vs 34% LIC), but LIC trended higher within *TP53*mut patients (39% vs 20%). p =1.00 overall, p=0.44 in the TP53-mutant subgroup

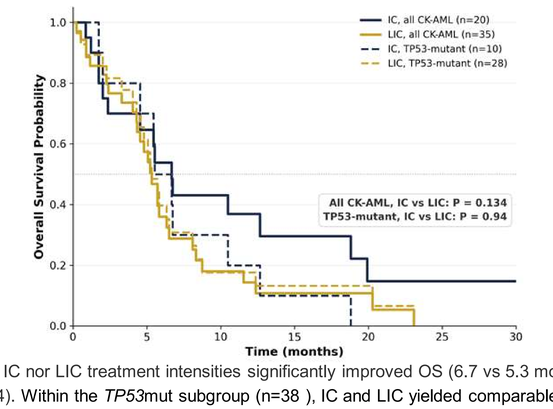
RESULTS — SURVIVAL OUTCOMES

Figure 1: Overall survival, all CK-AML patients and stratified by TP53 status



No significant difference in survival among all CK-AML patients, median OS 5.5 months. When stratified by *TP53* mutation status, median OS 5.5 months *TP53*mut vs 5.3 months *TP53*wt (p=0.11)

Figure 2: Overall survival by treatment intensity, all CK-AML patients and *TP53* status



Neither IC nor LIC treatment intensities significantly improved OS (6.7 vs 5.3 months, p=0.134). Within the *TP53*mut subgroup (n=38), IC and LIC yielded comparable OS (5.3 vs 6.1 months, p=0.94).

CONCLUSIONS

- In this real-world CK-AML cohort, neither *TP53* mutation status nor treatment intensity significantly impacted survival.
- Median overall survival (OS) was **5.5 months** among *TP53*mut patients, consistent with larger published series.
- The published survival advantage of *TP53*wt CK-AML appears to be largely **transplant-dependent**
- Median OS did not differ significantly by *TP53* status, potentially reflecting the **limited sample size and low allogeneic transplant rate** in this real-world cohort; only **3 of 57 patients (5.3%)** underwent allo-SCT
- These findings highlight the need for novel therapeutic strategies and clinical-trial enrollment, particularly for CK-AML patients with *TP53* mutations.

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