Tetraploidy/Near-Tetraploidy in AML

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Introduction

- 1% of AML cases are believed to be tetraploidy or near-tetraploidy.
- Few studies have analyzed the association between T/NT AML and other chromosomal aberrations that are associated with favorable and unfavorable prognoses.
- The objective of this study is to provide data on treatment outcomes and the impact of certain prognostic markers on survival in cases of tetraploidy/near-tetraploidy AML.

Methods

- A systematic literature search was performed and included studies published from January 1st, 1980 to August 1st, 2019.
- 128 cases of tetraploid and near-tetraploid AML were included from the literature in addition to 2 cases from Tulane Medical Center.
  - For this study, tetraploidy is defined as the presence of >10 of 20 G-banded metaphase chromosomes studied during karyotype analysis containing 92n.
  - Near-tetraploidy defined with same parameters above except with cells containing 81-103n.
- Complex karyotype: 3 or more additional structural or numerical abnormalities

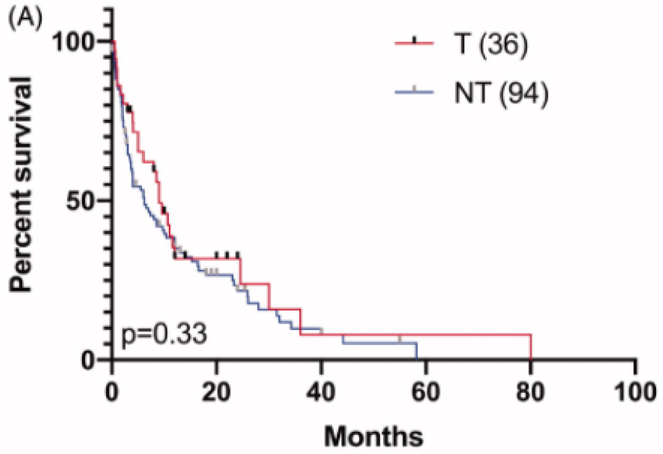
Results

- N = 130

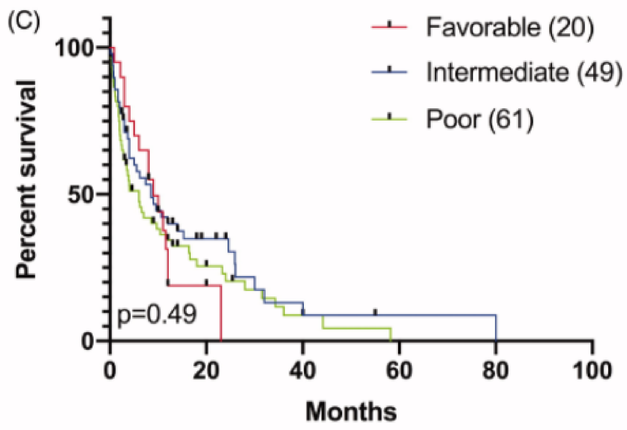
Tetraploidy	Near-tetraploidy	Complex Karyotype
27.7%	72.3%	53.1%

Favorable Risk	Intermediate Risk	Poor Risk	HSCT
15.4%	37.7%	46.9%	17.7%

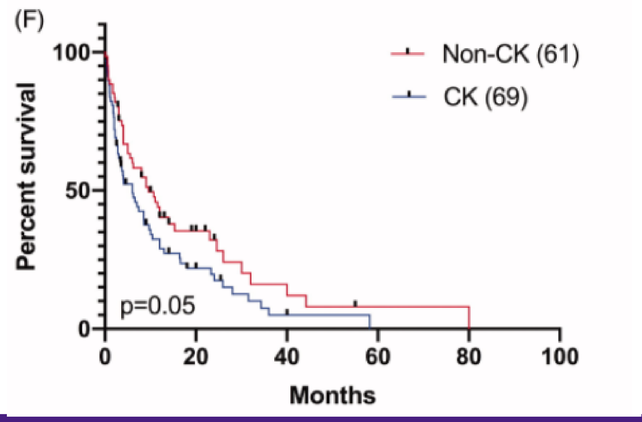
OS by AML Type



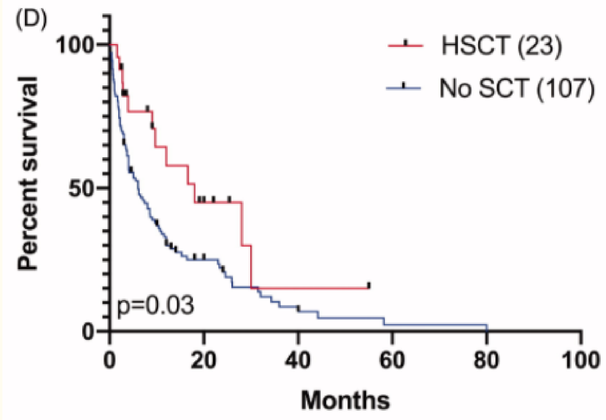
OS by Risk Category



OS by Complex Karyotype



OS by Stem Cell Transplant



Conclusion

- Stratification according to risk factors based on chromosomal abnormalities showed no impact on overall survival in the population of T/NT AML. This suggests that the unfavorable risk imposed by tetraploidy/near-tetraploidy may overcome favorable-risk features, challenging current methods of AML risk stratification.
- Allogenic stem cell transplant is required in all cases to improve survival.

Future Direction

- A review of the literature to identify treatment regimens administered prior to HSCT including methods of induction and maintenance chemotherapy to further understand the role of HSCT + chemotherapy in T/NT AML.

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