Molecular biomarker testing and targeted therapy patterns in patients with acute myelogenous leukemia (AML): a real-world data analysis

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BACKGROUND

• Acute myelogenous leukemia (AML), characterized by the clonal expansion of myeloid blasts in the blood, bone marrow, and/or other tissues, accounts for only 5% of all cancers, but is both the most common and most deadly acute leukemia in adults in the United States.1,2

• For 2022, over 20,000 new cases are expected with 11,500 AML-related deaths.3

• Cytogenetics or molecular mutations are important prognostic factors and increasingly guide treatment choice as targeted therapies are being more commonly used for AML.4,5

• Broadly speaking, genetic and molecular testing includes karyotyping, fluorescence in situ hybridization (FISH), polymerase chain reaction (PCR)-associated testing, traditional sequencing, and next-generation sequencing (NGS).6

• Although National Comprehensive Cancer Network (NCCN) guidelines recommend molecular testing for both younger (< 60 years) and older patients, its use in the routine care setting is not well-understood.

• This study describes real-world testing patterns, including use of NGS, and targeted therapy use in patients with AML in two large US community health systems.

METHODS

• Patients ≥18 years old, diagnosed with AML between January 1, 2015 and December 31, 2020, were identified in a database containing clinical and genomic data from two integrated community delivery networks.

• Data through March 31, 2021 were included in the analytic database to allow for adequate follow up for each study patient.

• Actionable biomarkers were defined by the NCCN AML guideline, version 3, 2021.7

RESULTS

• The median age of the 541 patients (79%) who received NGS or single gene/small panel tests was 69 years, compared with 78 years for the 144 (21%) patients with no testing.

• Patients with de novo AML were more likely to be tested compared to patients with secondary AML (84% vs. 67%, p<0.001).

• No significant difference was found in testing receipt between Non-Hispanic White and Non-Hispanic Black patients (82% vs. 76%, p=0.3).

• Approximately 80% of patients underwent NGS testing within 30 days of initial AML diagnosis and 15% >30 days after initial AML diagnosis; timing of NGS testing was unknown in 5% of patients. NGS testing increased between 2015 and 2018, with 72% to 78% of patients receiving NGS annually from 2018–2020.

• Testing for actionable biomarkers varied by biomarker and year (Figure 2).

• 52/100 (52%) of patients with FLT3 (ITD or TKD) mutation, 5/27 (19%) with IDH1 mutation and 11/44 (25%) with IDH2 mutation received targeted therapy.

CONCLUSION

• Molecular biomarker testing has increased over time with NGS becoming the dominant modality. Testing uptake did not differ by race.

• Half of patients with FLT3 mutation, one quarter with IDH2 mutations, and one fifth with IDH1 received targeted therapy.

• Future research should explore ongoing testing and targeted therapy administration over time and address real world applicability of this in the community setting, to include an analysis of older patients.

REFERENCES


