Review of Cases of Acute Myeloid Leukemia in Elderly Treated at Lehigh Valley Health Network from 2010-2014

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INTRODUCTION

- Acute myeloid leukemia (AML) is the most common type of acute leukemia among adults and causes the largest number of annual deaths from leukemias in the United States[1].
- Majority of AML patients are elderly, defined as age 60 and above, with a median age of diagnosis of 67 years and a 5-year survival range of 5-15%[2].
- Advanced age is one of the major prognostic factors in AML due to the increase in comorbidities and a greater likelihood for unfavorable cytogenetic abnormalities[3].
- FLT3 gene encodes for a tyrosine kinase receptor involved in hematopoiesis. Elderly patients have a higher frequency for the FLT3-ITD mutation, which is associated with an increased relapse risk and shorter overall survival[4].
- The goals of our study are to determine whether treatments offered to elderly AML patients at LVHN from 2010-14 were in accordance with the National Comprehensive Cancer Network (NCCN) Guidelines Version 1.2016 and to determine the overall survival of elderly AML patients and compare survival across risk groups.

METHODS

- 137 cases of elderly AML seen by LVHN were reviewed. 15 cases did not fit the classification of AML and 2 transferred care. These cases were excluded from our study, leaving 120 cases to be reviewed.
- Age of diagnosis, cancer morphology, presence of comorbidities, cytogenetic and molecular testing for risk stratification, treatment received, and overall survival were determined by reviewing all patient transcripts including pathology reports.
- The National Comprehensive Cancer Network Clinical Practice Guidelines in Oncology for Acute Myeloid Leukemia Version 1.2016 was referenced to compare treatment offered by LVHN to the national standard[1].

RESULTS

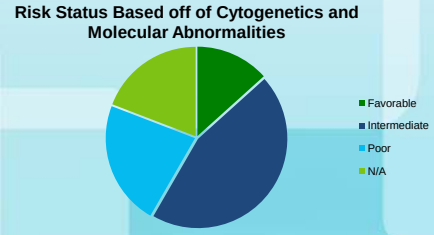

Figure 1. Patient risk status determined by cytogenetic and molecular studies of bone marrow aspirate. Presence of the following abnormalities placed a patient in the appropriate risk status: Favorable; inv(16), t(16;16), t(8;21), t(15;17), normal cytogenetics with NPM1(+) and FLT3-ITD(-), Intermediate; normal cytogenetics,+8, t(9;11), other non-defined, Poor; complex, monosomal karyotype, -5, 5q-, -7, 7q-, 11q23, inv(3), t(3;3), t(6;9), t(9;22), normal cytogenetics with FLT3-ITD(+).Percent of patients in each risk stratification group were as following: favorable, 13%; intermediate, 45%; poor, 23%; not available (N/A), 19%. Patients who did not have cytogenetic studies performed either did not receive further care or were put on hospice care, so the study was not needed.

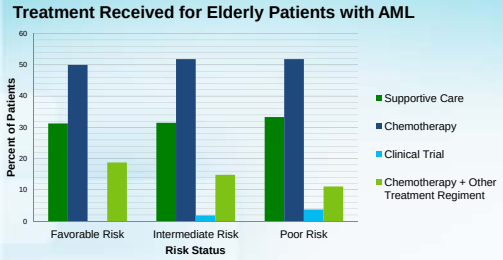

Figure 2. Treatment received for elderly patients with AML according to risk status. Percent of patients in each risk status that received the following treatments. (Dark Green) supportive care: transfusion support, hydroxyurea, hospice (Dark Blue) chemotherapy: single or combination 7+3 (standard-dose cytarabine with an anthracycline), MEC (mitoxantrone, etoposide, Ara-C), Vidaza (5-azacytidine), and/or Dacogen (decitabine), (Light Blue) clinical trial, (Light Green) chemotherapy + other treatment regiment, either stem cell transplant, clinical trial, or Mylotarg (gemtuzumab).

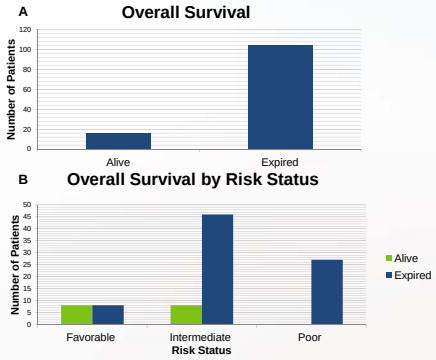

Figure 3. Survival of AML patients. A. Overall survival, 16 out of 120 patients survived (13%) and 104 expired (87%). B. Overall survival by risk status as following: favorable; 50% alive 50% expired, intermediate; 15% alive 85% expired, poor; 0% alive 100% expired.

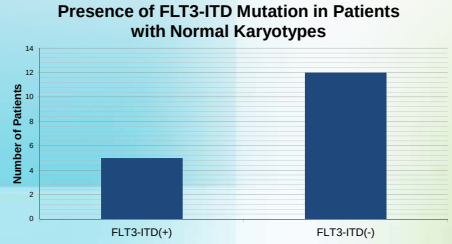

Figure 4. Frequency of FLT3-ITD mutation among the elderly AML patients whom have normal karyotypes. Out of the 120 elderly patients treated at Lehigh Valley Health Network from 2010-2014, 97 patients had cytogenetic studies performed. 41 patients had normal cytogenetics and 17 patients had additional molecular studies performed. Of the 17 patients, 5 patients (29%) obtained the FLT-ITD mutation and 12 patients (71%) did not.

CONCLUSIONS

- Treatments offered by LVHN were in accordance with the NCCN guidelines and were similar across risk status groups[1].
- There was about a 13% survival rate, consistent with the literature range[2].
- There were no survivors within the poor risk group, despite receiving the same treatments as patients with more favorable cytogenetics. Clinical trials should be encouraged for patients with poor risk cytogenetics.
- Potential therapeutic benefit for patients with a normal karyotype and FLT3-ITD mutation.

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