Leukemia Research Reports 10 (2018) 55–56

Contents lists available at ScienceDirect

Leukemia Research Reports

journal homepage: www.elsevier.com/locate/lrr

Clinical characteristics and treatment outcome of patients with isochromosome 17q (i17q) abnormality and myeloid neoplasms: A single center experience

Isochromosome 17q (i17q) is a commonly encountered chromosomal abnormality in myeloid neoplasms (MN) where there is a loss of 17p and duplication of 17q – leading to a single copy of 17p and three copies of 17q. It is found most commonly in combination with other chromosomal abnormalities (complex cytogenetics) and rarely as a sole mutation. Isochromosome 17q is seen in a variety of disorders such as Philadelphia positive (Ph +) Chronic Myeloid Leukemia (CML), Acute Myeloid Leukemia (AML), Hodgkin and non-Hodgkin lymphomas and myeloproliferative neoplasms (MPN) including MDS/MPN overlap syndromes. It is considered to be associated with poor prognosis and may have unique clinicopathological features. [1,2].

The aim of our study was to identify patients with myeloid neoplasms with i17q mutations (sole or with complex cytogenetics) and analyze their clinical characteristics and treatment outcome in a single center setting. We retrospectively identified patients with bone marrow biopsy proven myeloid neoplasms with i(17)(q10) mutations. This data was collected from the University of Kansas Cancer Center database between 2011 and 2017. We obtained patient demographics, the clinical course of their disease, diagnosis, and treatment regimens. Patients with insufficient data were excluded. Patient characteristics are shown in Table 1. Fourteen patients were identified with myeloid neoplasms with i17q. Twelve patients had associated complex cytogenetics while the remaining 2 patients had i17q as a sole abnormality. Five patients had de novo occurrence of i17q myeloid neoplasms while 9 had secondary evolution from a previously diagnosed myeloid neoplasm. Two of the 5 patients with de novo i17q neoplasms had i17q as the sole cytogenetic abnormality. This constituted 1 case of AML and 1 case of MDS/MPN. Secondary evolution of a previous i17q negative neoplasm to one with i17q positive most commonly occurred in patients with CML ($n = 4$), during blast crisis. The median overall survival was 10.4 months with a maximum duration of follow up of 102.4 months for the entire cohort (Fig. 1). Four patients underwent hematopoietic stem cell transplantation (HSCT) and had a median survival of 42 months (range: 20–90.3) while non-transplanted patients ($n = 10$) had a median survival of 9.4 months (range: 2.9–102.4). Three out of 4 patients who underwent HSCT were alive at the time of data collection. During the period of 2011 to 2017, we found 14 patients with i17q (either sole or with complex cytogenetic abnormalities) with a median survival of 10.4 months. Isochromosome 17q is often seen as a secondary evolution during blast crisis phase of CML and other myeloid neoplasms as reported in the literature and heralds an aggressive clinical course [3,4] Isochromosome 17q is associated with a poor prognosis in patients with myeloid neoplasms. [5,6] An improved survival trend was noted in our patients who underwent HSCT compared to those patients who were managed by traditional chemotherapy only. Due to low number of patients, a statistical difference in survival (HSCT vs non-HSCT) was not seen in our sample. We propose to explore the role of HSCT in patients with i17q using a larger platform like Center for International Blood and Marrow Transplant Research (CIBMTR) in future.

Table 1
Patient characteristics.

Number of patients (n)	14
Median age at i(17)(q10) diagnosis (range)	54.5 (19–74)
Sex	
Male	5 patients
Female	9 patients
Isochromosome 17q mutations	
Number of patients with i(17)(q10) in isolation	2
Number of patients with i(17)(q10) with other cytogenetic abnormalities	12
De Novo occurrence	5 (ALL-1; APL-1; AML-1; MDS/MPN-2)
Secondary evolution	9 (CML to Blast crisis-4; CLLto MDS/AML-1; CMMOL to AML-1; Primary Myelofibrosis in evolution-1; Essential Thrombocytosis to AML-1; MPN in evolution-1)

https://doi.org/10.1016/j.lrr.2018.06.002
Received 21 April 2018; Accepted 16 June 2018
Available online 20 June 2018

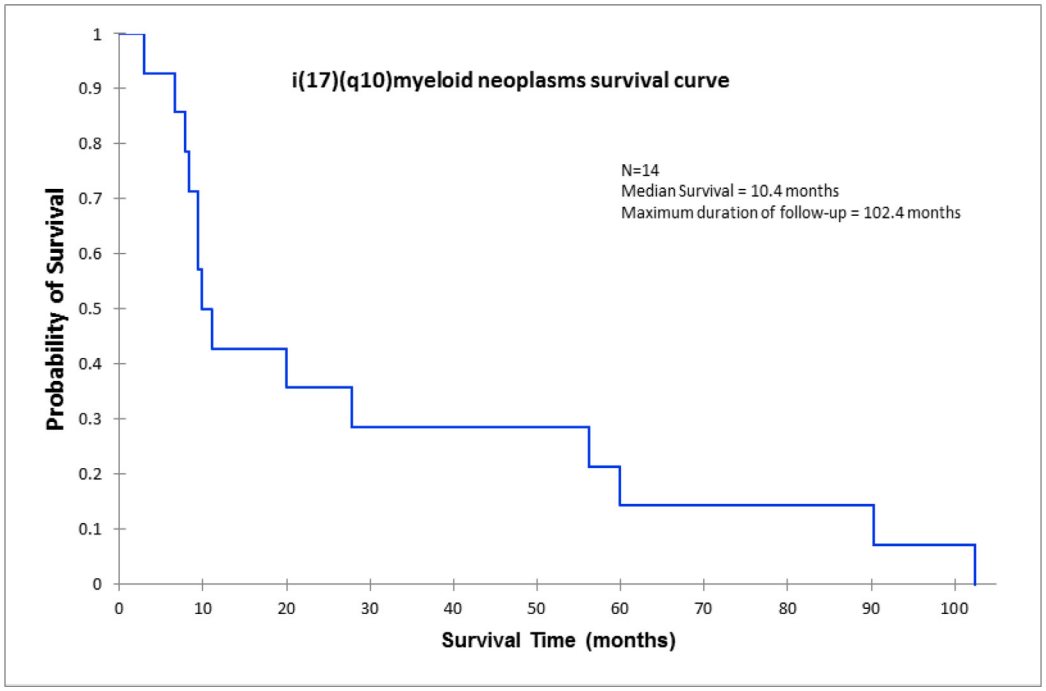

Fig. 1. Overall survival curve ($n = 14$). i(17)(q10) myeloid neoplasms kaplan meier survival curve. The median survival of transplanted patients (4 patients) was 42 months with a mean of 48.6. The median survival time for non-transplanted (10 patients) patients was 9.4 months with a mean of 22.8 months. $p = 0.076$ (Mann–Whitney test comparing overall survival between transplanted and non-transplanted patients) The data was non-normally distributed.

Conflict of interest

None for any authors.

References

[1] R.F. McClure, G.W. Dewald, J.D. Hoyer, C.A. Hanson, Isolated isochromosome 17q: a distinct type of mixed myeloproliferative disorder/myelodysplastic syndrome with an aggressive clinical course, Br. J. Haematol. 106 (2) (1999 Aug) 445–454.

[2] R. Kanagal-Shamanna, C.E. Bueso-Ramos, B. Barkoh, G. Lu, S. Wang, G. Garcia-Manero, et al., Myeloid neoplasms with isolated isochromosome 17q represent a clinicopathologic entity associated with myelodysplastic/myeloproliferative features, a high risk of leukemic transformation, and wild-type TP53, Cancer 118 (11) (2012) 2879–2888.

[3] J.C. Hernández-Boluda, F. Cervantes, D. Costa, A. Carrió, E. Montserrat, Blast crisis of Ph-positive chronic myeloid leukemia with isochromosome 17q: report of 12 cases and review of the literature, Leuk Lymphoma 38 (1-2) (2000) 83–90.

[4] S. Koumas, C. Prokopiou, M. Lerni, O. Seimeni, N. Neokleous, Isochromosome 17q10 associated with basophilia in primary myelofibrosis while with JAK2 inhibitor, Ann. Hematol. 94 (8) (2015) 1421–1422.

[5] A. Fabarius, A. Leitner, A. Hochhaus, M.C. Müller, B. Hanfstein, C. Haferlach, et al., Schweizerische arbeitsgemeinschaft für klinische krebsforschung (SAKK) and the German CML study group. Impact of additional cytogenetic aberrations at diagnosis on prognosis of CML: long-term observation of 1151 patients from the randomized CML study IV, Blood 118 (26) (2011) 6760–6768.

[6] H.M. El Gendi, D.A. Fouad, A.A. Mohamed, D.G. Eissa, N.N. Mostafa, Clinicopathologic features and prognostic impact of isochromosome 17q in chronic myeloid leukemia patients, Egypt. J. Hematol. 41 (1) (2016) 9–14.

Siddhartha Ganguly*, Mason Uvodich, Ajoy Dias, Joseph P. McGuirk
Division of Hematological Malignancies and Cellular Therapeutics, University of Kansas Health System, 2330 Shawnee Mission Parkway; Suite 210, Westwood, Kansas 66207, USA
E-mail address: sganguly@kumc.edu

* Corresponding author.