A multicentric observational study on the management of hyperleukocytic acute myeloid leukaemia in Belgium

OBJECTIVES – In hyperleukocytic acute myeloid leukaemia (AML) the risk of leukostasis is high due to the rapid increase in WBC count and the size of the myeloid blasts. It is associated with poor prognosis due to an increased risk of early death and relapse. Immediate initiation of cytoreductive treatment is essential to improve outcome, but evidence to prefer hydroxyurea, leukapheresis, intensive chemotherapy (IC) or a combination treatment, is lacking. Therefore, we investigated the current approach of hyperleukocytic AML in Belgium.

METHODS – All newly diagnosed AML patients presenting with hyperleukocytosis (>50,000/µL) between January 2013 and April 2019 in four Belgian centres were included in a retrospective analysis. Patient and disease characteristics were collected, as well as treatment choice and outcome parameters.

RESULTS – We included 121 patients with a median WBC count of 116,360/µL. The median age was 64 years. Leukostasis was present in 48%, extramedullar disease in 18% and CNS localization in 2,5% of the patients, but a lumbar puncture was only performed in 24% of all patients. The majority of our patients had AML FAB classification M5. As expected, FLT3-ITD (50%) and NPM1 (44%) mutations were overrepresented in our cohort, compared to the general AML population. According to the WHO 2016 classification, 51% had AML with recurrent genetic abnormalities, and 25% had AML-not otherwise specified (NOS). The majority (48%) was intermediate risk according to the ELN 2017 risk classification, followed by 28% favorable risk. Mortality at day 21 was 21% and overall mortality was 64% at a median follow-up of six months. Our population had a median overall survival (OS) of 9 months. Overall survival was worse for patients presenting with a WBC count >100,000/µL, but CR rate and early mortality did not differ significantly between patients presenting with a WBC count 50,000 - 100,000/µL versus > 100,000/µL. Twenty percent received leukapheresis, which was started within 24 hours. There was no difference in age distribution, treatment intensity or time to start IC between patients receiving leukapheresis or not. Although the leukapheresis group had a more severe presentation with a higher median WBC and blast count and a worse performance status, there was no difference in response to therapy, early or long-term mortality and OS. However, leukapheresis could not be withheld as a protective factor for early mortality (i.e. at day 21) in our multivariate analysis. In this analysis, only age at diagnosis and treatment modality (IC vs non-IC) were independent parameters that significantly affected early death. ELN risk classification did not impact early mortality.

CONCLUSION – Evidence on optimal treatment options in hyperleukocytic AML is lacking. We could not demonstrate any added value of leukapheresis. To improve the prognosis of this dramatic presentation, national or even European databases should be used to document and learn from the outcome of current practice.