FLT3 AND *NPM1* MUTATIONS IN PATIENTS WITH MYELOID NEOPLASMS

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ABSTRACT

Background: Acute myeloid leukemia (AML) and myeloproliferative neoplasms (MPN) are the most common entities of myeloid neoplasms. In AML, among the most frequent genetic alterations that carries both diagnostic and prognostic values are mutations in Nucleophosmin 1 *(NPM1)* and FMS-like tyrosine kinase 3 (*FLT3*) genes. Nevertheless, their frequencies among AML patients in Kuantan, Pahang have not been studied. Additionally, published literatures on both of these mutations in MPN are scarce although they have been shown to confer MPN in animal model.

Purpose: This cross-sectional study therefore aimed to determine the proportion of *FLT3-ITD, FLT3-D835* and *NPM1* mutations among patients diagnosed with AML and MPN in Hospital Tengku Ampuan Afzan (HTAA) of Kuantan, Pahang from the year 2016 to 2019.

Methodology: A total of 56 cases were studied, of which 43 cases were AML and 13 cases MPN. Molecular methods based on polymerase chain reaction were employed for mutation detection, from the retrieved trephine biopsy tissue blocks.

Result: Six of the 43 cases (14.0%) of AML were positive for *FLT3-ITD* and a similar proportion (6/43, 14.0%) were also positive for *NPM1* mutations. *FLT3-D835* mutation was identified in three of the AML cases (7.0%) while concurrent mutations of *NPM1* and *FLT3-ITD* were seen in 2 cases (4.7%). Two of 13 (15.4%) MPN cases were positive for *FLT3-ITD*. None of the MPNs cases were positive for either *FLT-D835* or *NPM1* mutations.

Conclusion: The frequency of *FLT3* and *NPM1* mutations in the AML cases in our study were relatively lower as compared to other reports. The significance of *FLT3-ITD* mutation positivity found in our series of MPN remains to be elucidated.

Keywords: Acute Myeloid Leukemia, Myeloproliferative Neoplasms, *FL3-ITD*, *FLT3-D835*, *NPM1*

Acknowledgement: We would like to express our heartfelt gratitude towards the Department of Pathology HTAA, Kulliyyah of Medicine, IIUM and SASMEC@IIUM for their support in undertaking this research.