Hematol Oncol Stem Cell Ther (2016) xxx, xxx–xxx

Available at www.sciencedirect.com

ScienceDirect

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

LETTER TO EDITOR

The *JAK2* V617F mutation and thrombocytopenia

Stephen E. Langabeer *, **Karl Haslam**

Cancer Molecular Diagnostics, St. James's Hospital, Dublin, Ireland

Received 27 June 2016; accepted 10 August 2016

Dear Editor,

The *JAK2* V617F mutation, which provides a growth and survival advantage to hematopoietic clones, is the most commonly observed driver mutation in myeloproliferative neoplasms (MPNs), present in more than 95% of polycythemia vera patients and in 50–60% of essential thrombocythemia and primary myelofibrosis (PMF) patients. This mutation is also present in a smaller but significant proportion of patients with myelodysplastic syndrome (MDS)/MPN. The diagnosis of these hematopoietic malignancies is multifactorial and dependent upon clinical presentation, peripheral blood and bone marrow morphological features, other hematological features, and increasingly, the underlying molecular genetic signature [1,2]. A sporadically observed trigger for requesting *JAK2* V617F analysis is for investigation of a thrombocytopenia as a manifestation of PMF or MDS/MPN; however, the causes of thrombocytopenia are many and can be divided into decreased bone marrow platelet production, increased peripheral platelet destruction, increased splenic sequestration, and dilution categories [3]. Given the relatively low incidence of PMF or MDS/MPN compared with other causes of thrombocytopenia, the clinical value of screening for the *JAK2* V617F mutation in such cases was assessed.

A retrospective audit was performed on *JAK2* V617F requests to a central hematological malignancy molecular diagnostic center. From January 2006 to May 2016 inclusive, there were 13,411 requests for *JAK2* V617F mutation analysis. Of these requests, 186 (1.4%) had clinical details of a thrombocytopenia. A screening assay capable of detecting a 1% mutant allele burden did not detect the *JAK2* V617F in any of these 186 patients.

It must be noted that rare cases of the development of *JAK2* V617F-positive essential thrombocythemia in preexisting thrombocytopenic disorders have been documented where the resultant increase in platelet count has been clinically beneficial [4,5]. In addition, autoimmune disorders, including immune thrombocytopenia, are increasingly speculated to be risk factors for the subsequent development of an MPN [6]. However, the aforementioned observation in patients with isolated thrombocytopenia suggests that investigation for *JAK2* V617F is not routinely indicated in the absence of other clinical and laboratory features of an MPN. This brief but informative audit confirms the requirement for considered selection of laboratory tests for the investigation of thrombocytopenia.

Conflicts of interest

The authors declare no conflicts of interest regarding the publication of this paper.

* Corresponding author at: Cancer Molecular Diagnostics, Central Pathology Laboratory, St. James's Hospital, Dublin 8, Ireland.
E-mail address: slangabeer@stjames.ie (S.E. Langabeer).

http://dx.doi.org/10.1016/j.hemonc.2016.08.006

Please cite this article in press as: Langabeer SE, Haslam K, The *JAK2* V617F mutation and thrombocytopenia ..., *Hematol Oncol Stem Cell Ther* (2016), http://dx.doi.org/10.1016/j.hemonc.2016.08.006

References

[1] Tefferi A. Primary myelofibrosis: 2014 update on diagnosis, risk-stratification, and management. Am J Hematol 2014;89:915–25.
[2] Mughal TI, Cross NC, Padron E, Tiu RV, Savona M, Malcovati L, et al. An International MDS/MPN working group's perspective and recommendations on molecular pathogenesis, diagnosis and clinical characterization of myelodysplastic/myeloproliferative neoplasms. Haematologica 2015;100:1117–30.
[3] Smock KJ, Perkins SL. Thrombocytopenia: an update. Int J Lab Hematol 2014;36:269–78.
[4] Amato D, Wang C. Resolution of thrombocytopenia with JAK2 mutation in a patient with Gaucher disease. Blood 2013;122:4287–8.
[5] Huang CE, Chen YY, Liu JL, Ho HY, Li CP, Chen CC. JAK2V617F mutation in immune thrombocytopenia. Thromb Res 2016;144:149–51.
[6] Sørensen AL, Hasselbalch HC. Antecedent cardiovascular disease and autoimmunity in Philadelphia-negative chronic myeloproliferative neoplasms. Leuk Res 2016;41:27–35.

Please cite this article in press as: Langabeer SE, Haslam K, The *JAK2* V617F mutation and thrombocytopenia ..., *Hematol Oncol Stem Cell Ther* (2016), http://dx.doi.org/10.1016/j.hemonc.2016.08.006