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LETTER TO THE EDITOR

Patterns and utility of vitamin B12 and folate testing in patients with isolated thrombocytopenia

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Dear Editor,

Isolated thrombocytopenia is a common indication for hematologic consultation. Testing for vitamin B12 (B12) and folate deficiencies is commonly performed during the evaluation of cytopenias. However, only one case in the literature proposes B12 deficiency as the cause of a patient's isolated thrombocytopenia, and confirmatory methylmalonic acid (MMA) testing was not performed [1]. Additionally, routine folate testing among patients without obvious risks for folate deficiency has been shown to lack utility [2]. Therefore, the value of testing B12 and folate levels in the setting of isolated thrombocytopenia is unknown. We performed this study to determine the patterns and results of B12 and folate testing during the evaluation of isolated thrombocytopenia at our institution.

We included all adult patients (age ≥ 18 years) who underwent evaluation for isolated thrombocytopenia in the inpatient or outpatient setting between January 1, 2015, and December 31, 2016. Inclusion criteria consisted of the following: platelet count of $< 150 \times 10^9$/L, hemoglobin of ≥ 12.0 g/dL for women or ≥ 13.5 g/dL for men, and absolute neutrophil count of $\geq 1.5 \times 10^9$/L. The platelet count at the time of initial evaluation, specialty of the evaluating clinician, ultimate cause of thrombocytopenia, and levels of vitamin B12, MMA, and folate were recorded.

A total of 129 patients underwent evaluation for isolated thrombocytopenia. The median age was 61 years (range, 20–87) and most were males (65.1%). Hematologists most often performed the evaluation (67.4%), followed by hospitalists (16.3%), internists (9.3%), and other specialties (7.0%). B12 level was assayed in 57 (44.2%) patients, and of these, an MMA was performed concurrently or sequentially for 15 (26.8%). Of the 57 patients, only three (5.3%) had low B12 levels (179, 148, 143 ng/L; normal 180–914 ng/L), and of these, an MMA was tested in one and was normal. The remaining two patients were diagnosed with primary immune thrombocytopenia (ITP) and sarcoidosis with splenomegaly, respectively. Folate levels were tested in 37 (28.7%) patients and all were normal. The ultimate causes of the patients' thrombocytopenia are shown in Fig. 1. ITP (37 patients; 28.7%), liver cirrhosis (22; 17.0%), and alcohol abuse (11; 8.5%) were most common. The unknown category represents patients with mild thrombocytopenia (platelet counts $101–149 \times 10^9$/L) of unknown etiology that did not meet diagnostic criteria for ITP based on the practice guidelines of the American Society of Hematology [3]. Other causes for isolated thrombocytopenia not found in our cohort but which the clinician should be aware of include heparin-induced thrombocytopenia, antiphospholipid syndrome, type II Von Willebrand disease, inherited thrombocytopenia, and clonal cytopenia of unknown significance [4].

Testing for B12 and folate levels is a common practice at our institution when evaluating isolated thrombocytopenia. However, no case of thrombocytopenia was determined to be due to B12 or folate deficiency. Despite the lack of evidence for B12 or folate deficiency as a cause of isolated thrombocytopenia, almost half and a third, respectively, of patients had B12 or folate levels performed during their evaluation. Though these tests are neither expensive nor invasive, when repeated needlessly over time, additive costs and extraneous data can cause confusion and misdirection in patient

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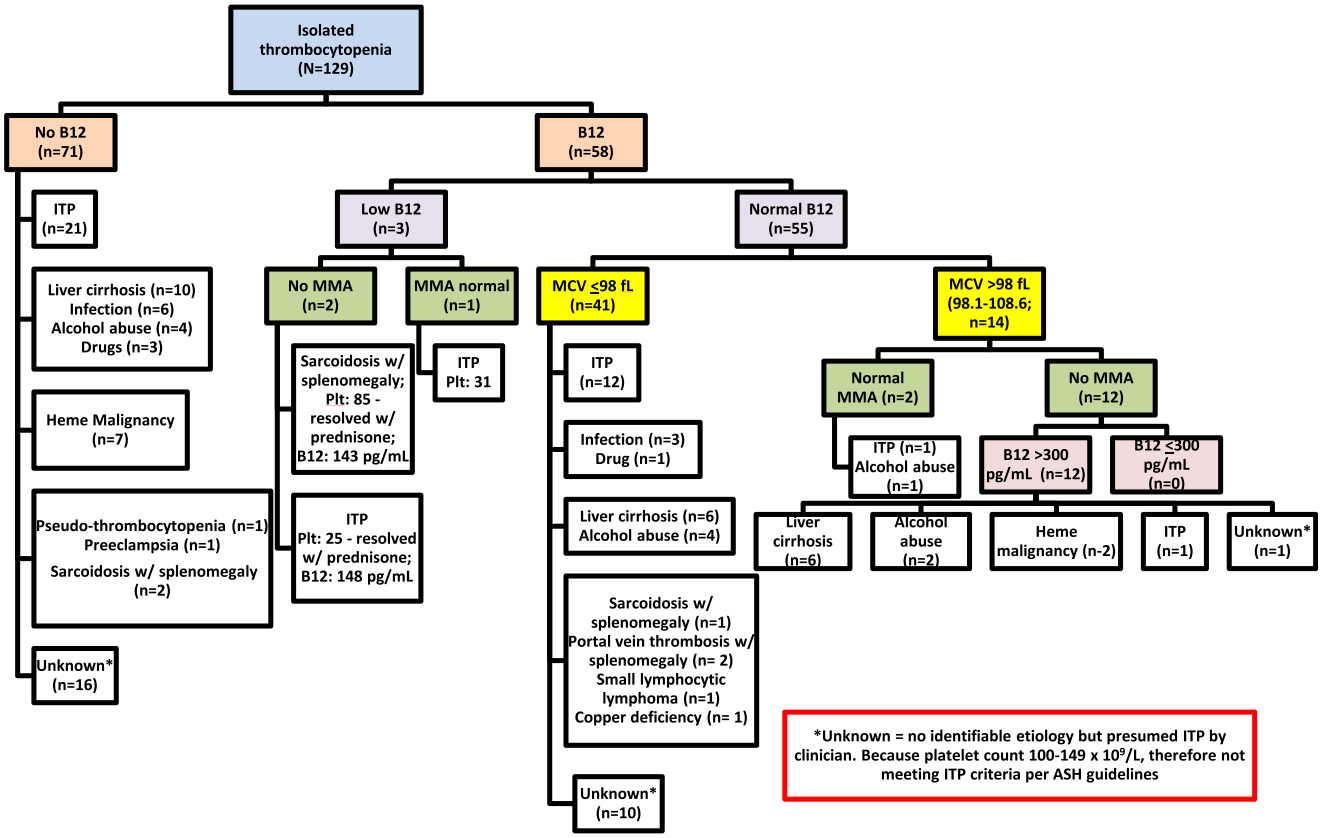

Fig. 1 Causes of isolated thrombocytopenia. Plt = platelet count, ITP = immune thrombocytopenia, MMA = methylmalonic acid, MCV = mean corpuscular volume, ASH = American Society of Hematology

care. Based on our study findings, we recommend against routine testing for B12 and folate deficiency in the setting of isolated thrombocytopenia.

Compliance with ethical standards

Ethics approval and consent to participate This study was approved by the authors' institution's IRB.

Conflict of interest The authors declare that they have no conflicts of interest.

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