for opportunistic infections is advisable. Future studies on ruxolitinib may benefit from prospective monitoring of CD4, CD8, NK, and B cell profiles of patients for improved understanding of the pathophysiology of the immunodeficiency associated with ruxolitinib.

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Retrospective screening for Philadelphia-negative myeloproliferative neoplasms in patients with cerebral infarctions as revealed using the revised 2016 World Health Organization diagnostic criteria

TO THE EDITOR: Arterial and venous thromboses are major clinical events in patients with Philadelphia-negative myeloproliferative neoplasms (MPNs) including essential thrombocythemia (ET) and polycythemia vera (PV) [1, 2]. Some MPN patients suffer from vascular complications even prior to diagnosis [3]. In some cases, MPN is evident in individuals newly diagnosed with cerebral infarction (CI) which is a type of thrombosis [4].

The World Health Organization (WHO) revised the MPN diagnostic criteria in 2016 [5]. Most notably, in the revised criteria, the hemoglobin/hematocrit threshold values for the diagnosis of PV were lowered. This has markedly changed the diagnostic landscape, and consequently, the treatment options and outcome of this disorder. However, the revised criteria were not widely used to evaluate patients with CI until recently. Thus, we retrospectively evaluated the likelihood of MPN in CI patients using the revised criteria. The medical records of CI patients admitted to the Chungnam National University Hospital from January 2016 to December 2017 were retrospectively reviewed. Patients with erythrocytosis or thrombocytosis were divided into those with a reactive case and possible, probable, or proven MPN. "Possible MPN" indicates that a reactive increase

in RBC or platelet level is not evident, but the increase is resolved during follow-up. "Probable MPN" indicates that the increase in RBC or platelet level continues during follow-up. "Proven MPN" is diagnosed with PV or ET based on the WHO criteria. In total, 1,729 CI patients (1,003 men; 726 women) of median age 73 years (range, 19–96 yr) were reviewed. Thrombocytosis (platelets $\geq 450\times10^9$/L) was evident in 69 (4.0%) patients at diagnosis or during follow-up. Reactive thrombocytosis was the most common form of thrombocytosis (N=62, 3.6%). Three (0.2%) patients were considered to exhibit possible ET, and four (0.2%) had proven ET. The causes of reactive thrombocytosis (N=62 patients) included infection (N=59, 95.2%), bleeding (N=1, 1.6%), and iron-deficiency (N=1, 1.6%). Erythrocytosis was evident in 79 (4.6%) patients at diagnosis or during follow-up. Reactive erythrocytosis was the most common form of erythrocytosis (N=50, 2.9%), followed by possible PV (N=21, 1.2%), probable PV (N=6, 0.3%), and proven PV (N=2, 0.1%). None of the 27 patients with possible or probable PV underwent further investigations. Particularly, the *JAK2* mutational status was not explored. Reactive erythrocytosis (N=50) was detected during diagnosis and follow-up in 28 (56.0%) and 22 (44.0%) patients, respectively, and all cases were attributable to hemoconcentration. Of the four patients with proven ET, two lacked any other predisposing factor for thrombosis. All patients with proven ET and PV exhibited multifocal CI and previously undetected infarctions on CI diagnosis.

These results showed that many CI patients with erythrocytosis did not undergo further evaluation in terms of a PV diagnosis and that *JAK2* mutational status should be evaluated in such patients. Stroke is a global health problem with a global lifetime risk of approximately 25% in people 25 years and older (as of 2016). People living in East Asia, Central Europe, and Eastern Europe have the highest risk of stroke [6]. In Korea, stroke accounts for roughly 1 out of every 10 deaths, and the proportion of ischemic stroke has steadily increased [7]. To effectively care for patients with PV-associated CI, hematologists should communicate well with neurologists.

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Beta-2 microglobulin as a prognostic factor of primary central nervous system lymphoma

TO THE EDITOR: Primary central nervous system lymphoma (PCNSL) is an extra-nodal non-Hodgkin lymphoma involving the brain, leptomeninges, eyes, or spinal cord and no primary malignancy outside of the central nervous system (CNS). PCNSL is a rare lymphoma and accounts for only 1% of all incident lymphomas [1, 2]. Prevalence of the disease is higher in the sixth to eighth decades of life. The median age at diagnosis of PCNSL is 65 years and the incidence is rising in the elderly population [3, 4].

Among several previously published prognostic models, the International Extranodal Lymphoma Study Group (IELSG) and the Memorial Sloan Kettering Cancer Center (MSKCC) models are the most widely used in current practice [5, 6]. Old age and poor performance status at initial diagnosis were strong poor prognostic factors commonly found in both studies. Meanwhile, serum beta-2 microglobulin (B2MG) is a well-established prognostic factor in multiple myeloma and follicular lymphoma [7, 8]. Thus,