myelogenous leukaemia, that can be identified via its distinctive BCR-ABL translocation.

To complete diagnosis of idiopathic myelofibrosis
Criteria: Thrombocytosis > 450.10^9/L, increased red-cell mass (> 25 % of the predicted value), presence of immature myeloid cells in peripheral blood, (leukerythroblastosis with dacryocytes or teardrop cells, atypical platelets, and circulating giant megakaryocytes).

To confirm a clonal hematopoietic stem cell
disorder.

To confirm MPD in cases with high erythrocyte,
leukocyte, or platelet counts.

To diagnose MPDs, even latent, in cases of portal,
mesenteric vein thromboses and Budd-Chiari Syndrome. JAK2 mutation should be investigated in patients with splanchnic vein thrombosis as half of the PV and ET cases show thrombotic complications.

Specimen Requirements

Collect: 2 X 5 mL whole blood sample (EDTA, lavender top tube).

Testing Information: TaqMan Allelic discrimination & quantitation Detection sensitivity ~2%.

Stability: Maintain sample at room temperature (24 hours) or refrigerator temperature (4 days) - do not freeze.

Price: Please contact the International Team for pricing details.

References


All references are published on our web site: www.biomnis.com
Recently, several groups reported a single, acquired point mutation (1849G>T) in the Janus kinase 2 (JAK2) gene in the majority of patients with Ph-negative myeloproliferative disorders. This somatic mutation causes the substitution of phenylalanine for valine at position 617 of the JAK2 (p.Val617Phe or V617F).

JAK2 V617F protein binds the intra-cytoplasmic sequences of multiple cytokine receptors via their FERM domain. The V617F mutation in JAK2 is located in the JH2, or pseudokinase domain, which negatively regulates the kinase domain (JH1). Biochemical studies have shown that the JAK2 V617F mutation causes cytokine-independent proliferation of cell lines that express erythropoietin receptors and leads these cells to become hypersensitive to cytokines.

JAK2 V617F has been identified in more than 90% of patients with polycythaemia vera and in 50% to 60% of patients with essential thrombocythaemia or idiopathic myelofibrosis. This mutation has also been observed in several related leukaemic disorders, including chronic neutrophilic leukaemia, chronic eosinophilic leukaemia, chronic myelomonocytic leukaemia (CMML), and rare cases of myelodysplastic syndromes (MDS).

Clinical Utility of Direct Diagnostic Test for the JAK2 V617F mutation

- **To confirm a diagnosis of PV, ET, and IMF:** Genetic test-based diagnostic algorithm for suspected polycythaemia vera (PV):
  - Peripheral blood mutation screening for JAK2 V617F and serum erythropoietin (Epo) measurement

<table>
<thead>
<tr>
<th>V617F (+) and Epo ↑</th>
<th>V617F (+) and Epo normal or ↑</th>
<th>V617F (-) and Epo normal or ↑</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV probable but bone marrow biopsy encouraged but not essential for diagnosis</td>
<td>PV probable but both tests should be repeated first and bone marrow biopsy necessary if results remain unchanged</td>
<td>PV unlikely but not impossible</td>
</tr>
<tr>
<td>PV possible consider JAK2 exon 12 mutation analysis and bone marrow biopsy</td>
<td>PV possible consider JAK2 exon 12 mutation analysis and bone marrow biopsy</td>
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*from Tefferi A & Pardanani A.

- **To confirm essential thrombocythaemia (ET) with a persistent thrombocytosis > 450 x 10^9/L in the absence of an alternative cause.** However, ET must be differentiated from another MPD, chronic