PLATELET FUNCTION ANALYSIS:
The PFA-100

Effective October 24, 2005, Metropolitan Medical Laboratory now offers platelet function testing using the PFA-100. This instrument simulates the initial steps of in vivo hemostasis, passing platelets through an aperture coated with two separate platelet activators: collagen-epinephrine, and collagen-ADP. The results allow a determination of whether platelet function is normal or abnormal; and if abnormal, whether it is due to platelet inhibiting drugs (aspirin, NSAID, etc.), or due to an intrinsic platelet defect, such as Von Willebrand Disease.

<table>
<thead>
<tr>
<th>Platelet Activator</th>
<th>Normal Platelet Function</th>
<th>Drug Induced Dysfunction</th>
<th>Intrinsic Platelet Dysfunction</th>
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</thead>
<tbody>
<tr>
<td>Epinephrine</td>
<td>Normal</td>
<td>Abnormal</td>
<td>Abnormal</td>
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<tr>
<td>ADP</td>
<td>Normal</td>
<td>Normal</td>
<td>Abnormal</td>
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This new platelet function assay (PFA-100) replaces the Bleeding Time, our laboratory’s previous test of platelet function. This test suffered from unacceptable variability and lack of standardization. Additionally, a recent policy statement from the College of American Pathologists suggested that the Bleeding Time not be used as a preoperative screen for hemostasis. Therefore, as of October 24, 2005, the Bleeding Time test will no longer be offered.

Indications for the PFA-100 include:
1. A pre-operative assessment of bleeding risk.
2. A generalized hemostatic screen along with PT and aPTT in any patient with an abnormal bleeding history.
3. A measure of possible platelet dysfunction in patients with a history of ingesting platelet-inhibiting drugs such as aspirin or NSAIDS.
4. As part of a diagnostic workup (along with PT, aPTT, D-Dimer and fibrinogen) in a seriously bleeding patient.
5. A screen for menometrorrhagia & Von Willebrand Disease (VWD).

Several recent studies have shown that 10-30% of female patients presenting with menometrorrhagia have underlying Von Willebrand Disease. Platelet function testing might be considered before hysterectomy is preformed for dysfunctional uterine bleeding.
The American College of Obstetricians and Gynecologists (ACOG) Committee on Gynecologic Practice made the following recommendations in 2001:

“Inherited and acquired disorders of coagulation and hemostasis should be considered in the differential diagnosis of menorrhagia and any abnormal uterine bleeding.”

Prompt diagnosis of VWD, or of a platelet function defect in women with menorrhagia would lead to appropriate and effective management of bleeding and possible avoidance of unnecessary surgery.

A comprehensive diagnostic workup for bleeding disorders, e.g. Von Willebrand Disease and Platelet Function Disorders, can be complex and expensive; however, this PFA0199 is highly sensitive for the diagnosis of VWD (88-100% sensitive) and platelet function disorders (>90% sensitive).

If a normal result is obtained, further testing is usually not indicated. If an abnormal result is obtained, further lab testing is indicated, i.e. VWD panel and platelet aggregation.

This platelet function screen correlates well with platelet aggregation studies, and is more sensitive than platelet aggregation in detection of VWD and inherited platelet function defects (96% versus 80% sensitivity for diagnosis of inherited defects).

A platelet count of less than 150,000/mm$^3$ and a hemotocrit less than 35% can be associated with abnormal PFA-100 results even with normal functioning platelets. Thus, abnormal results in these instances cannot be used as evidence of platelet dysfunction. Normal PFA-100 results with a low platelet count or hematocrit do, however, suggest normally functioning platelets.


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