Mean Platelet Volume (MPV)

Platelet disorders are relatively common in the general practice of medicine. In order to assist in clarifying the cause of these disorders and help in some instances with diagnosis, the Mean Platelet Volume (MPV) will now be reported with every Complete Blood Count, at no additional charge, and effective immediately.

BACKGROUND
Platelets bud off megakaryocytes in the marrow. Platelet size and volume (e.g. MPV) depends on the circumstances of their production in the marrow. MPV is not related to aging of platelets in the circulation. Platelet parameters are very stable in most patients. Serial measurements therefore may be of value, for example, in following a patient at risk for developing pre-eclampsia or with recovery from pancytopenia after chemotherapy.

CLINICAL SIGNIFICANCE

MPV is increased in conditions with increased platelet production:
- Immune thrombocytopenia
- Disseminated intravascular coagulation
- Myeloproliferative disorders
- Pre-eclampsia, and
- Recovery from transient hypoplasia (cytotoxic chemotherapy)

MPV is decreased in conditions associated with under production of platelets:
- Bone marrow aplasia

MPV is of PARTICULAR VALUE in the presence of ….

Thrombocytopenia:
A High MPV with low platelet count indicates platelet destruction such as:
- Immune thrombocytopenia
- Pre-eclampsia
- Sepsis
- Some hereditary platelet disorders e.g. Bernard Soulier Syndrome.

A Low MPV with low platelet count indicates hypersplenism or marrow underproduction of platelets, such as:
- Aplastic anemia
- Cytotoxic drug therapy
- Some hereditary platelet disorders e.g. Wiskott Aldrich Syndrome.
Thrombocytosis:
A Low MPV with a high platelet count suggests a reactive thrombocytosis as seen in:
Infection
Inflammation
Malignancy

A High MPV with a high platelet count is more suggestive of primary thrombocytosis associated with myeloproliferative disorders.

Normal Platelet Count:
High MPV ----------------- Chronic Myeloid Leukemia
High MPV ----------------- Hyperthyroidism
Low MPV ----------------- Chronic Renal Failure

Possible role of MPV in patients with Acute Coronary Syndrome:
Platelet activation and aggregation are known to play a pivotal role in contributing to thrombus formation or platelet adherence after coronary plaque formation. MPV correlates with the functional status of platelets and is an emerging risk marker for atherothrombosis.1

In addition MPV may act as a risk factor for recurrent myocardial infarction independent of established risk factors and is thought to be a simple and inexpensive laboratory aid along with conventional cardiac biomarkers for risk stratification of acute coronary syndrome patients admitted to the emergency room.2


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