

THROMBOCYTOSIS

Thrombocytosis is a term that means there is an increased number of platelets (or some may say 'thrombocytes') in the blood. Remember, there are three types of cells in the blood -- red cells, white cells and platelets.

Platelets are the body's first defense against bleeding. When the body is cut or otherwise injured and starts to bleed, the platelets will form a "plug" that is the beginning of a clot to stop the bleeding.

Platelets are formed by megakaryocytes in the bone marrow. They break off and enter the blood stream where they "float" for hours to days. There are 140-440 x 10⁹ /L. Suffice it to say, they are very small and huge in numbers, even in people who are in the "normal" range.

HOW DOES THROMBOCYTOSIS DIFFER FROM THROMBOCYTOPENIA?

Thrombocytopenia means that there are not enough platelets; thrombocytosis is just the opposite - there are too many. The main danger to having too many platelets is that there may be increased clotting. This could lead to such problems as a stroke, a blood clot in an artery, a myocardial infarction ("heart attack") or clots in the placenta of a pregnant woman leading to a miscarriage.

ARE THERE USUALLY SYMPTOMS?

Because we are in an era where laboratory tests are done frequently, most people with thrombocytosis will not exhibit any symptoms but are found with this condition on routine lab tests or on lab tests that are done routinely for another problem.

WHAT IS THE PLATELET COUNT FOR SOMEONE WITH A DIAGNOSIS OF THROMBOCYTOSIS?

Thrombocytosis refers to people with platelet counts greater than 600 x 10⁹ /k. It may be primary or secondary. Secondary refers to the thrombocytosis resulting from some other problem. High platelet counts may be associated with such conditions as (1) extensive bleeding; (2) iron deficiency anemia; (3) removal of the spleen; (4) acute and chronic inflammatory diseases (rheumatoid arthritis is an example); (5) chronic infections, such as tuberculosis or osteomyelitis; (6) inflammatory diseases of the gastrointestinal tract such as Crohn's disease or ulcerative colitis; (7) malignancies; or (8) postpartum.

Patients without an underlying disease or condition are referred to as having essential thrombocytosis. Most of the patients with secondary thrombocytosis have platelet counts of less than 1000 x 10⁹ / L, although occasionally the count may exceed 1000 x 10⁹ /L, especially in post-splenectomy patients. Also, in patients with secondary thrombocytosis, the platelet count will gradually fall over time, especially if there is treatment of the underlying problem.

WHAT IS PRIMARY THROMBOCYTOSIS ?

Essential thrombocytosis (primary) is a myeloproliferative disorder much like polycythemia rubra vera and chronic myelogenous leukemia. It is believed to be a clonal disease. In other words, there is an abnormality of one of the primitive cells in the bone marrow that leads to increased megakaryocytes and increased platelets.

Some of the people with essential thrombocytosis may eventually develop one of the other myeloproliferative diseases, such as chronic myelogenous leukemia or polycythemia rubra vera. Many people with essential thrombocytosis will not have any symptoms. Others may have problems with increased bleeding or increased clotting. This may occur in the form of a stroke, a heart attack, a clot in one of the arteries in the abdomen, or clots in small vessels of the hands or feet, resulting in pain or discoloration.

HOW IS PRIMARY THROMBOCYTOSIS TREATED?

There is essentially, a two pronged approach to treatment. One is to decrease the output of platelets by the bone marrow. The second is to decrease platelets aggregating to form clots by using aspirin. Aspirin can be used to prevent clotting. It is inexpensive although, occasionally, people have stomach bleeding from aspirin.

Many patients have been successfully treated for years in this manner. There is, however, no known cure. Platelet counts of people with secondary or so-called reactive thrombocytosis will often become normal once the underlying cause is treated.

WHAT USUALLY HAPPENS TO A PERSON PRESENTING WITH ABNORMALLY HIGH PLATELET COUNTS?

Ordinarily, patients who present with high platelet counts are evaluated for an underlying cause to make sure they do not have thrombocytosis secondary to some underlying problem. If no underlying disease is found; blood counts and a bone marrow test are done to see if there is any evidence of some other myeloproliferative disease. Assuming no underlying disease is found, the patient will carry a diagnosis of essential thrombocytosis.

SHOULD EVERYONE WITH ELEVATED PLATELET COUNTS BE TREATED?

The next problem is whether or not people with elevated counts need to be treated. First some facts:

1. There is not a good correlation between the level of the platelet count and the possibility of increased clotting. In other words, there is no way of choosing a particular platelet count and saying that everybody over that count will have problems and everybody under will not.
2. Most of the people with secondary thrombocytosis will not have clotting and bleeding problems.
3. We cannot predict accurately those people who will progress to develop leukemia and even if that were possible, there is no treatment to prevent this from occurring.

Therefore, at the present:

1. Most people with secondary thrombocytosis do not receive anti-platelet therapy.
2. Those people with thrombocytosis who have had some sort of vascular problem, i.e., stroke, gangrene, etc. are treated.
3. Those people with essential thrombocytosis and no history of a clot are usually not treated although, on occasion, their doctor may feel there are extenuating circumstances such as age or some other disease is present. People with platelet counts over one million may be treated arbitrarily.

ASSUMING THAT A PATIENT NEEDS TREATMENT, WHAT ARE THE TYPES OF TREATMENT AVAILABLE?

In an acute situation of a person with a high platelet count who is having problems with clotting, platelet pheresis may be used to quickly drop the platelet counts. A drug that acts relatively quickly, such as nitrogen mustard, can be used to depress the bone marrow and thereby decrease the production of platelets may be used. Currently, the best drug available is anagralide that works well and does not appear to have many side effects. It does inhibit platelet function and therefore could potentially cause bleeding.