The ITP Support Association Platelet Reprint Series

No. 47 – A healthy child has low platelets - is it always

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Title: **A Healthy Child Has Thrombocytopenia: Is It Always ITP?**

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When readers of the Platelet consider a low platelet count, they often think about ITP because they themselves, a family member, or someone whom they know has the condition. However, there are many other disorders that cause low platelets and bleeding. Physicians seeing previously healthy young children who suddenly or more slowly develop petechiae and bruising often suspect ITP and confirm it by demonstrating a low platelet count on the CBC (complete blood count, the same as a "full blood count" in the U.K.). However, thrombocytopenia has other causes, an important fact that we teach to all of our medical students and young doctors (and also remind more experienced physicians who may have forgotten!). But if it's not always ITP, what else can the diagnosis be when petechiae, bruising, and perhaps other bleeding occur in a previously well child?

When a doctor evaluates a patient, several important steps are taken. First comes a medical history, followed by a physical examination, laboratory tests, and then a differential diagnosis where all of the diagnostic possibilities are considered. Using petechiae and bruising as an example, we would like to review this specific process with our readers.

Usually a medical history and physical examination, along with a careful assessment of the blood count, provides a specific diagnosis or at least some important clues in creating a differential diagnosis. Taking a history involves defining the "chief complaint," in this case petechiae, bruises, and maybe bleeding from body orifices – nose, mouth, intestine, or vagina. We also ask for details about the duration, timing, and frequency of bleeding, and treatments used by the patient and/or recommended by others. This is accompanied by a "review of systems" where we try to learn whether the child has other problems such as fatigue, frequent infections, fever, or medical conditions involving the immune system or other body organs. If we uncover concerns in these other areas, the provisional diagnosis of "uncomplicated primary" ITP begins to appear as less likely. The family history is important as well. Some children with chronic ITP have relatives with autoimmune conditions such as lupus or rheumatoid arthritis, providing clues about the diagnosis. However, acute ITP in children only very rarely runs in families. So if we learn that family members have low platelets or suggestive symptoms resulting from a low platelet count, we try to "probe" for some form of hereditary or familial thrombocytopenia that mimics ITP. Such conditions can be restricted to the platelets or associated with a variety of other abnormalities involving the skin, kidneys, eyes, immune system, and other organs.

The next important part of the evaluation is the physical examination. Most children (and adults as well) with ITP are otherwise healthy except for the petechiae and bruises. However, if they have been unwell in the past or have findings such as eczema, enlarged lymph glands, fever, pallor, or enlargement of the liver or spleen, then a condition other than ITP (such as leukemia) is possible.

The next important step is to perform laboratory tests (and to carefully review the results of prior testing that the child may have had). People with ITP generally have isolated thrombocytopenia (with platelets of less than 50,000 per mm3 if bleeding is apparent). By "isolated" we mean that the other components of the blood count (hemoglobin concentration measuring anemia and white blood cell count, including a "differential" assessment of the various kinds of white blood cells) are normal. If any other part of the CBC

is abnormal then the diagnosis of ITP should be viewed with suspicion. Also important is a very careful examination of the platelets under the microscope. In ITP the platelets may be larger than normal, but they are not "giant" (approaching the diameter of red blood cells). There are also clues when red and white blood cells examined under the microscope suggest that ITP might not be the correct diagnosis. Fragmented red blood cells along with anemia suggest thrombotic thrombocytopenic purpura (TTP), and certain abnormalities involving the neutrophil (a type of white blood cell that fights infection) suggest a form of familial thrombocytopenia. Often additional evaluation (bone marrow examination, antibody tests for "secondary" ITP, including tests for infections including HIV, Hepatitis C, and, etc.), as well as blood count testing in family members, can be helpful in arriving at a correct diagnosis.

Now a brief comment about "secondary" ITP. This means that a person's ITP is in some way caused by or secondary to another condition. Examples are an autoimmune disorder such as lupus, an infection such as hepatitis or H. pylori, a drug causing thrombocytopenia, or when the person is producing antibodies against other blood cells. When antibodies attack red blood cells and cause anemia, this problem along with ITP has been called Evans syndrome. Similarly, antibodies can be directed against the neutrophils, a white blood cell important in combating infection, or paradoxically a person's entire set of antibodies against germs can be reduced, as in common variable immunodeficiency. So, the diagnosis of ITP – primary or secondary – is not so straightforward!

Wouldn't it be nice to simply have a simple and definitive "ITP test" to tell us for sure whether the child (or adult for that matter) has ITP or not? Unfortunately, there is no "ITP test." The various methods that have been used for detection of anti-platelet antibodies (presumably the cause of ITP) lack sensitivity and specificity – i.e., they just aren't that good. Thus ITP remains for physicians "a diagnosis of exclusion." The physician's job is to do the very best that they can to rule out or exclude other possible diagnoses. Once that has been done and the patient appears to have ITP the next step is arriving at a personalized management plan. That subject has been the topic of prior American Perspectives and will surely be the subject of many future ones.