



## No. 43 – Silent Hemorrhage in ITP: Does it

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Title: **Silent Hemorrhage in ITP: Does it Occur? Does it Matter?**

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Since the late 1970's, hematologists have attempted to quantify and characterize bleeding in ITP through the use of bleeding assessment tools, also known as bleeding scales or bleeding scores. Several ITP-specific bleeding methods have been developed for use in both children and adults, but they have limitations, since they were not developed using scientific methods. One of the most significant limitations of the current scales is that they evaluate only readily observable bleeding.

Bleeding in ITP can potentially occur in any body site, including the skin, from body orifices (nose, mouth, rectum, bladder, or vagina), or internally. Most kinds of internal bleeding are cause for concern, but none more than hemorrhage in the brain – called an intracranial hemorrhage (ICH). Because bleeding in the brain usually causes symptoms in patients and is life-threatening, prevention and early diagnosis are important. It may be that identification of bleeding in other body locations, accompanied by use of bleeding scales, could serve as a better indicator of ICH risk. In 2009, a study compared initial findings on 40 children with ITP who had suffered an intracranial hemorrhage (ICH) to a control group of 80 children with ITP without brain hemorrhage. Of the 40 children with ICH, 22% had blood in the urine (hematuria), either obvious to the patient or silent (detected by using a simple chemical test and confirmed visually under a microscope), prior to developing brain hemorrhage. In contrast, no children from the control group had hematuria, obvious or silent. Although blood in the urine seemed to correlate with ICH, the study was unable to obtain urine samples from all patients, so we cannot say for certain that a true relationship actually exists.

Although all hematologists inquire of their new ITP patients about the presence of blood in the urine or stool, most do not routinely test for invisible or “silent” bleeding in the urine or stool using a sensitive microscopic or chemical test. In most instances, the presence of blood in the urine can be quickly detected by using a urine dipstick test, which is a specially treated chemical strip that is placed in collected urine and changes colors to indicate the presence of such things as protein, glucose, or blood. If the dipstick test is positive for blood, the urine is then examined under a microscope to visually confirm the presence and quantity of red blood cells. Similarly, stool can also be tested for the presence of blood by using chemically pre-treated stool cards that turn blue if blood is present when hydrogen peroxide is added.

In addition to detection of blood in urine and/or stool, the presence of small bruises (called “petechiae”) or minute capillary hemorrhages in the brain called “microbleeds” may also be useful as a sensitive ICH risk indicator. To our knowledge, there have been no studies of brain microbleeds in ITP patients with very low platelet counts. Magnetic resonance imaging (MRI) is a technique that is currently being utilized in some adults with high blood pressure or previous stroke to assess for the presence of brain microbleeds. They can be seen on MRI as deposits of iron that accumulate primarily in areas of the brain where red blood cells have broken down after such small bleeds have occurred. Thus, perhaps detection of microbleeds in the brain, even when the ITP patient has no obvious symptoms from them, would be important in helping to predict risk of future problems.

So the questions we raise are these: Can more useful ITP bleeding scales be developed and tested? Is there a connection between hematuria and risk of ICH? Does silent bleeding occur in the urine, stool, and brain? If so, does it predict future problems? These are some of the research questions being studied by our Dallas research team.