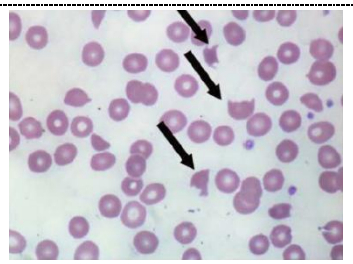
# Comparison of Common Hematological Disorders

| Hemolytic Uremic Syndrome (HUS) | Trombotic Thrombocytopenic Purpura (TTP) | Idiopathic Thrombocytopenic Purpura (ITP) |
|---|---|---|
| It affects "children" | It affects "Young adults" | It occurs in "children or adults" |
| It occurs after bloody ***diarrheal illness*** (Previous infection) | - Usually idiopathic.<br>- Maybe triggered by ***HIV infection.*** | Thrombocytopenia may be the ***initial presentation of HIV or HCV infection*** |
| Due to infection with :<br>**Shiga toxin produced by a strain of *E.coli* (01 57:H7).** | Hereditary or acquired ***autoantibody to ADAMTS13***, a plasma protease that cleaves von Willebrand factor (vWF) off the endothelial surface. | ITP is usually diagnosed after excluding other possible causes of thrombocytopenia based on :<br>• History<br>• Examination<br>• CBC and peripheral smear<br><br>If all other causes of thrombocytopenia excluded, the most appropriate next step is :<br>***testing for HIV and hepatitis C virus***<br>↓<br>If test is negative :<br>***Bone marrow biopsy*** |
| **Pathophysiology** | | |
| - Shiga toxin initially invades and destroys colonic epithelial lining, producing bloody diarrhea → **Followed by:** systemic vascular endothelial injury and subsequent platelet microthrombi formation, which leads to thrombocytopenia and schistocytes as they flow through small vessels. | - As ADAMTS13 1evels fall *(due to antibody)*, vWF multimers accumulate on the endothelial wall, trapping platelets at areas of high shearing force (eg, small arterioles, capillaries) and leading to the formation of thrombi. | |
| **Presentation** | | |
| **Abdominal pain** + **bloody diarrhea** | **Neurological changes** *(weird patient / headache/confusion/Coma/stroke with normal CNS examination)* + **Fever** | - No splenomegaly or stigmata of liver disease<br>- No fever, palatal petechiae, cervical lymphadenopathy or splenomegaly (No EBV infection) |
| **+ triad of :** | | |
| **1- <u>Microangiopathic hemolytic anemia :</u>**<br>- RBC count ↓<br>- Haptoglobin ↓ / LDH ↑<br>- Indirect bilirubin ↑<br>- Mild ↑ ALT/ AST<br><br>**Most appropriate next step is :**<br>**Peripheral blood smear:**<br>show signs of intravascular hemolysis (eg, **schistocytes**, triangle cells) |  | **<u>No</u> anemia (normal Hb)** |
| **2- <u>Thrombocytopenia :</u>**<br>- Bleeding time ↓<br>- Normal PT/ PTT (Normal coagulation studies) | | **<u>Isolated thrombocytopenia</u>** |
| **3- <u>Acute kidney injury :</u>**<br>• <u>Clinically :</u><br>- Hematuria<br>- Poor urine output<br>- Edema<br>• <u>Laboratory:</u><br>- Creatinine ↑<br>- BUN ↑<br>- Proteinuria | | **<u>No</u> acute kidney injury** |
| **Treatment** | | |
| **Treatment is supportive**<br>- Fluid/electrolyte management<br>- Blood transfusions<br>- Dialysis | **Treatment is emergent (life-threatening) :**<br>1- **Plasma exchange**<br>2- Glucocorticoids are often added. | **Treatment of the underlying infection can affect the platelet count.** |
| **Differential diagnosis** | | |
| **Microangiopathic hemolytic anemia & Thrombocytopenia** can also be seen in :<br>- **<u>DIC</u>** → <u>Abnormal</u> coagulation studies.<br><br>*(While in HUS & TTP → <u>Normal</u> coagulation studies)*<br><br>MedicoNotes www.mediconotes.com | | **<u>Henoch-Schonlein purpura</u>**<br>IgA-mediated small vessels vasculitis following URI in children causing :<br>**1.** Palpable purpura **2.** Arthralgias<br>**3.** Abdominal pain **3.** Renal disease<br><br><u>Normal</u>: platelet count & coagulation studies |