Diagnosis, Treatment, and Management of Immune Thrombocytopenia

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Management of immune thrombocytopenia (ITP) requires accurate assessment and evaluation, appropriate treatment strategies, and timely nursing interventions (e.g., monitoring, bleeding prevention, patient education). The overview of ITP in the current article reviews its etiology and provides updates about medical management and key components of nursing care.

Nurses working in any setting may see patients with immune thrombocytopenia (ITP), which also is referred to as idiopathic thrombocytopenic purpura. ITP is defined as a low platelet count when no other cause can be identified. ITP is an immune destructive process with a low production of platelets from the bone marrow (Neunert et al., 2011). Primary ITP is a distinct disorder, but secondary ITP occurs because of other illnesses, such as HIV, hepatitis C virus, infection or sepsis, liver disease (e.g., cirrhosis), and myelodysplasia or bone marrow disorders (Neunert et al., 2011). Secondary ITP also can occur in patients undergoing chemotherapy. Life-threatening bleeding from ITP occurs more often in patients aged 60 or older, with rates of 10%–15% per patient per year (George, 2013). For patients with chronic ITP, the platelet count is abnormal but they do not require treatment (George, 2013). Those patients generally have platelet counts greater than 50 x 10^3 mm^3. Normal platelet count in healthy adults is 150–400 x 10^3 mm^3.

Patients may present with ITP without any specific symptoms. ITP often is diagnosed when patients have a routine complete blood count (CBC). Some patients may complain of easy bruising or bleeding, but symptoms of ITP are minimal. More women than men are diagnosed with ITP, particularly during pregnancy. ITP also can occur in children. Children often have spontaneous remissions from ITP, which are more rare in adults (George, 2013).

Assessment

When patients present with a low platelet count on a CBC, a complete review of medications should follow, as well as a full medical history and physical examination. In addition to certain illnesses, many medications can cause a low platelet count. Medications that can affect platelet count include acetaminophen, cimetidine, bactrim, tamoxifen, haloperidol, diazepam, alemtuzemab, famotidine, heparin, rifampin, quinine, and methyl-dopa (Neunert et al., 2011). If a medication is suspected of contributing to a diagnosis of ITP, it should be discontinued to determine if the platelet count recovers. Patient medical history should focus on issues of previous bleeding from surgeries or tooth extractions. Menstrual cycles and patterns of heavy flow should be assessed as well. Physical examinations should evaluate bruising, petechiae, and splenomegaly. Examination of the mouth may reveal petechiae or mucosal hemorrhage.

Blood count evaluation with manual differential identifies sizes and shapes of cells, including platelets, white blood cells, and red blood cells. ITP can occur with other health issues (e.g., anemia, neutropenia). A bone marrow biopsy to rule out a myeloproliferative disorder or myelodysplasia is not warranted unless the patient is aged 60 years or older (Provan et al., 2010).

A single test cannot diagnose ITP, so the diagnosis occurs through process of elimination. When ITP is suspected, healthcare providers test for HIV, Helicobacter pylori, and quantitative immunoglobulin, as well as perform blood group typing to determine treatment for ITP. Studies do not show that platelet antibody results lead to a diagnosis of ITP (Provan et al., 2010). To evaluate spleen and liver size, an abdominal ultrasound may be performed. Splenic enlargement may occur because of sequestration of platelets.

Treatment

Once ITP is diagnosed, treatment decisions follow. Patients often do not have bleeding issues unless the platelet count is less than 30 x 10^3 mm^3. Some patients do not have bleeding with a platelet count of less than 10 x 10^3 mm^3, but their risk of bleeding increases. Treatment decisions should weigh the risks of treatment side effects with effective treatment outcomes. Side effects from ITP treatment can negatively affect quality of life. Treatment may...
be necessary if patients have bleeding or trauma or need a surgical procedure.

Treatment urgency guides first-line therapy decisions. Other treatment considerations include cost of treatment and length of the treatment period (see Table 1). Many patients respond to initial therapy but may relapse, which necessitates additional therapy. Initial first-line therapy is corticosteroids unless contraindicated. If a patient begins steroids (e.g., 1 mg/kg prednisone daily) and responds, a tapering schedule should follow as soon as reasonably possible. Healthcare providers usually determine the tapering schedule by the patient platelet count because no standard schedule exists. Twenty to thirty percent of patients still need treatment after steroid therapy, adding another first- or second-line therapy (Neunert et al., 2011).

A standard corticosteroid treatment protocol is 40 mg dexamethasone daily for four days, but side effects from the drug limit its use. Response rates with corticosteroids range from 50%–80% (George, 2013). A corticosteroid protocol can be prescribed more than once, and it also can accompany other treatments such as IV immunoglobulin (IVIG) or rituximab.

When making treatment decisions, healthcare providers should weigh the potential for side effects against the urgency for response against an elevated platelet count. Rho(D) immune globulin, IVIG, and rituximab can raise the platelet count quickly and with some sustained response, so they may be indicated in more emergent situations. Rituximab is considered a second-line treatment after first-line therapy fails. Each of those three treatment options can prompt serious side effects. Rho(D) immune globulin can cause hemolysis; IVIG can cause headaches, prolonged infusion times, rare renal failure, and thrombosis; and rituximab can cause anaphylactictype reactions (Neunert et al., 2011; Provan et al., 2010).

When first-line treatment fails, second-line therapies are considered. Splenectomy (open or via laparoscopy) often is postponed until six months after diagnosis. With splenectomy, response rates can be up to 80% (Neunert et al., 2011). At least two weeks prior to splenectomy, patients should receive pneumococcal, meningococcal, and Haemophilus influenzae type B vaccines (Neunert et al., 2011). Those patients are at risk of lifelong bacterial infections, so they should receive education about symptoms and when to contact their healthcare providers. A splenectomy is not without complications, including infection, abscess, hernia, adhesions, and thrombosis (Neunert et al., 2011). Other second-line therapies include azathioprine, cyclophosphamide, danazol, dapsone, rituximab, and mycophenolate mofetil (Provan et al., 2010). Response rates are variable and may not be sustainable.

Newer agents such as romiplostim and eltrombopag have emerged as treatment options for patients who no longer respond to standard ITP therapies, but the medications are expensive (Neunert et al., 2011). The agents may be considered for patients at high risk for bleeding when splenectomy is contraindicated. Side effects of those two agents are minimal, but bone marrow reticulin formation may occur (Amgen Inc., 2008; GlaxoSmithKline, 2008). Patients should maintain treatment with romiplostim or eltrombopag because, when discontinued, platelet counts often fall lower than when treatment began. Patients have been on those treatments for up to four years with minimal toxicities (Provan et al., 2010).

### Nursing Care

When caring for patients with ITP, nurses should monitor laboratory counts, perform clinical assessment, provide support and coordination of treatment, prevent bleeding, and educate patients about treatments and side effects. Based on platelet counts, nurses should educate patients and family members about the frequency

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dosage</th>
<th>Time Until Response</th>
<th>Side Effects</th>
<th>Cost†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dexamethasone</td>
<td>40 mg daily for 4 days, can repeat</td>
<td>4–38 days</td>
<td>Increased appetite, diabetes mellitus, headache, osteoporosis, insomnia</td>
<td>$</td>
</tr>
<tr>
<td>Eltrombopag</td>
<td>50 mg orally 1 hour before or 2 hours after meals daily, maintain indefinitely</td>
<td>7–28 days</td>
<td>Bone marrow fibrosis, thrombotic and thromboembolic complications, hepatic laboratory value changes</td>
<td>$$$</td>
</tr>
<tr>
<td>IV immunoglobulin</td>
<td>0.4 g/kg daily for 5 days or 1 g/kg daily for 1 or 2 days, can repeat</td>
<td>2–7 days</td>
<td>Headache, fever, allergic reaction, rash, prolonged infusion times, rare renal failure, thrombosis</td>
<td>$$$</td>
</tr>
<tr>
<td>Prednisone</td>
<td>1 mg/kg daily, tapering schedule, can repeat</td>
<td>7–28 days</td>
<td>Increased appetite, diabetes mellitus, headache, osteoporosis, insomnia</td>
<td>$</td>
</tr>
<tr>
<td>Rho(D) immune globulin</td>
<td>50–75 mcg daily, can repeat, for patients with Rh+ blood who have spleen</td>
<td>3–7 days</td>
<td>Hemolysis, allergic reaction, headache, chills, fever, nausea and vomiting</td>
<td>$</td>
</tr>
<tr>
<td>Rituximab</td>
<td>375 mg/m² IV weekly for 4 weeks, can repeat</td>
<td>7–180 days</td>
<td>Infusion reaction, fever, chills, headache, rigor, lymphopenia, anaphylactic-type reactions</td>
<td>$$$</td>
</tr>
<tr>
<td>Romiplostim</td>
<td>1 mcg/kg weekly, increase to 1 mcg/kg to raise platelet count above 50,000, maintain indefinitely</td>
<td>7–10 days</td>
<td>Bone marrow fibrosis, thrombotic and thromboembolic complications, hepatic laboratory value changes</td>
<td>$$$</td>
</tr>
</tbody>
</table>

*Cost of drug without administration costs in U.S. dollars

$—$0–$100 per dose; $100–$2,000 per dose; $$$—$2,000 or greater per dose

Note. Based on information from Amgen Inc., 2008; GlaxoSmithKline, 2008; Neunert et al., 2011; Provan et al., 2010.
of laboratory testing, with draws more often at the start of treatment when low platelet counts (i.e., less than $30 \times 10^9 \text{ mm}^3$ or, in some cases, less than $10 \times 10^9 \text{ mm}^3$) increase the risk of bleeding. Ongoing patient assessment for bleeding, bruising, and petechiae is needed. Monitoring vital signs can prompt investigation of hidden and occult bleeding when patients have low blood pressure and high pulse rates. Patients and family members should alert healthcare providers about fever or illness because fever or sepsis can destroy platelets. Patients with fever can be evaluated promptly with physical examinations and laboratory data.

Nurses should review patient medication lists often to ensure that new medications (e.g., ibuprofen, aspirin, clopidogrel) do not add to or cause ITP or alter platelet function. Nurses may arrange platelet transfusions and explain the process to patient and family members, if needed, based on laboratory results (i.e., high risk with platelet count less than $10 \times 10^9 \text{ mm}^3$) and clinical assessment. Some patients may fear platelet transfusions or reactions to the transfusion and resist consenting to them. In some areas of the United States, platelets are in very short supply, so they should be given only when necessary.

Nurses should focus on teaching patients and family members about the risks of bleeding and how to prevent, monitor, and possibly treat a bleed (e.g., nose bleed). Pressure may be applied along with some specific wound hemostatic agents (e.g., Gelfoam®) (Shelton, 2009). Ice applied to the area may slow or stop the bleeding because of vasoconstriction.

Patients are at an increased risk for bleeding with certain activities (e.g., contact sports, use of dangerous equipment). As a prevention strategy, patients should use electric razors instead of blades. Safe oral care includes using soft toothbrushes and taking special care with flossing. Nurses should encourage patients and family members to assess their home environment to reduce the risk of falls, particularly around unsafe stairs or rugs.

Other ways to prevent bleeding include reducing invasive procedures and alternating blood pressure readings between arms. To minimize trauma and the risk of bruising, nurses should encourage the use of assistive devices if patients are at risk for falling, particularly when using walkers and canes (Shelton, 2009). Patients should avoid constipation and not use suppositories or enemas. Using lubrication for sexual activity reduces bleeding risk. However, when platelet levels are extremely low, sexual activity should be avoided. If younger female patients are on treatments such as romiplostim, pregnancy should be avoided because of a low platelet count and concerns about risks to the fetus. Patients may require referral to a gynecologist to assist with menstruation.

Nurses should ensure that patients know how to take the treatment or medication for ITP, as well as what treatment interactions and side effects may occur. Many ITP treatments have side effects that affect quality of life. For example, corticosteroids, often used in treatment for ITP, can cause weight gain, insomnia, elevated blood sugar, and peptic ulcers (Provan et al., 2010).

Conclusion

ITP is a platelet-destructive process and a malfunction of platelet production. Many first- and second-line treatment options are available. Patients may respond to treatment, or the condition may become chronic. Nursing care includes monitoring laboratory counts, clinical assessment, support and coordination of treatment, preventing bleeding, and education about treatment and side effects.

References


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