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Hemolytic-uremic syndrome

Shiga-like toxin producing *E coli* hemolytic-uremic syndrome (STEC-HUS) is a disorder that most often occurs when an infection in the digestive system produces toxic substances. These substances destroy red blood cells and cause kidney injury.

Causes

Hemolytic-uremic syndrome (HUS) often occurs after a gastrointestinal infection with *E coli* bacteria (*Escherichia coli* O157:H7). However, the condition has also been linked to other gastrointestinal infections, including shigella and salmonella. It has also been linked to non-gastrointestinal infections.

HUS is most common in children. It is the most common cause of acute kidney failure in children. Several large outbreaks have been linked to undercooked hamburger meat contaminated with *E coli*.

E coli can be transmitted through:

- Contact from one person to another
- Consuming uncooked food, such as milk products or beef

STEC-HUS is not to be confused with atypical HUS (aHUS) which is not infection-related. It is similar to another disease called thrombotic thrombocytopenic purpura (TTP).

Symptoms

STEC-HUS often begins with vomiting and diarrhea, which may be bloody. Within a week, the person may become weak and irritable. People with this condition may urinate less than normal. Urine output may almost stop.

Red blood cell destruction leads to symptoms of anemia.

Early symptoms:

- Blood in the stools
- Irritability
- Fever
- Lethargy
- Vomiting and diarrhea

- Weakness

Later symptoms:

- Bruising
- Decreased consciousness
- Low urine output
- No urine output
- Pallor
- Seizures -- rare
- Skin rash that looks like fine red spots (petechiae)

Exams and Tests

Your health care provider will perform a physical exam. This may show:

- Liver or spleen swelling
- Nervous system changes

Laboratory tests will show signs of hemolytic anemia and acute renal failure. Tests may include:

- Blood clotting tests (PT and PTT)
- Comprehensive metabolic panel may show increased levels of BUN and creatinine
- Complete blood count (CBC) may show increased white blood cell count and decreased red blood cell count
- Platelet count is usually reduced
- Review of a blood smear, which shows deformed and fragmented red blood cells
- Urinalysis may reveal blood and protein in the urine
- Urine protein test can show the amount of protein in the urine

Other tests:

- Stool culture may be positive for a certain type of *E coli* bacteria or other bacteria
- Colonoscopy
- Kidney biopsy (in rare cases)

Treatment

Treatment may involve:

- Dialysis
- Medicines, such as corticosteroids
- Management of fluids and electrolytes
- Transfusions of packed red blood cells and platelets

Outlook (Prognosis)

This is a serious illness in both children and adults, and it can cause death. With proper treatment, more than half of people will recover. The outcome is better in children than adults.

Possible Complications

Complications may include:

- Blood clotting problems
- Hemolytic anemia
- Kidney failure
- Hypertension leading to seizures, irritability, and other nervous system problems
- Too few platelets (thrombocytopenia)
- Uremia

When to Contact a Medical Professional

Contact your provider if you develop symptoms of HUS. Emergency symptoms include:

- Blood in the stool
- No urination
- Reduced alertness (consciousness)

Contact your provider if you have had an episode of HUS and your urine output decreases, or you develop other new symptoms.

Prevention

You can prevent the known cause, *E coli*, by cooking hamburger and other meats well. You should also avoid contact with unclean water and follow proper hand washing methods.

Alternative Names

HUS; STEC-HUS; Hemolytic-uremic syndrome

References

Alexander T, Licht C, Smoyer WE, Rosenblum ND. Diseases of the kidney and upper urinary tract in children. In: Yu ASL, Chertow GM, Luyckx VA, Marsden PA, Skorecki K, Taal MW, eds. *Brenner and Rector's The Kidney*. 11th ed. Philadelphia, PA: Elsevier; 2020:chap: 72.

George G, Friedman KD. Thrombotic thrombocytopenic purpura and the hemolytic uremic syndromes. In: Hoffman R, Benz EJ, Silberstein LE, et al, eds. *Hematology: Basic Principles and Practice*. 8th ed. Philadelphia, PA: Elsevier; 2023:chap 132.

Mele C, Noris M, Remuzzi G. Hemolytic uremic syndrome. In: Ronco C, Bellomo R, Kellum JA, Ricci Z, eds. *Critical Care Nephrology*. 3rd ed. Philadelphia, PA: Elsevier; 2019:chap 50.

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