
When your patient's own complement system turns against them[1]
SEE THE THREAT. STAY AHEAD OF THE STORM.
As a nephrologist, you have the power to recognize atypical-HUS early. Prompt differential diagnosis could impact the risk of organ damage, including kidney injury.[1-5]
A
U
H
S
ALEXION®
AstraZeneca Rare Disease

Atypical-HUS: Causes and Consequences

KNOW THE CAUSE

Atypical hemolytic uremic syndrome (atypical-HUS) is a life-threatening condition driven by terminal complement overactivation[2]

- In atypical-HUS, the risk of complement-mediated thrombotic microangiopathy (TMA) can be lifelong[1,2,6-8]
- Onset can be sudden or gradual, can occur at any age, and should be considered life-threatening[1,2,9-11]

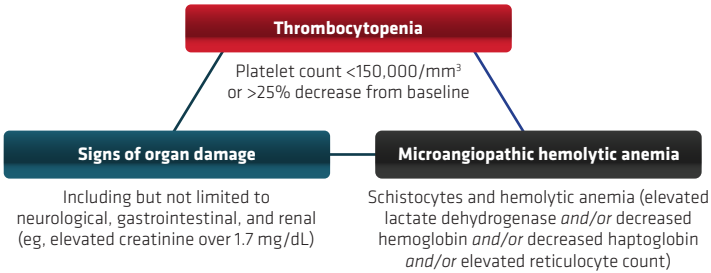
UNDERSTAND THE CONSEQUENCES

Patients with atypical-HUS may be at ongoing risk of sudden systemic, life-threatening complications[1,2]

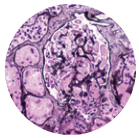
- If undetected, it can progress toward irreversible tissue damage and progressive organ damage, such as end-stage renal disease[2]
- **Nearly half of patients** will require dialysis, suffer permanent kidney damage, or die within 1 year of first occurrence[1,9]

IDENTIFY THE TMA

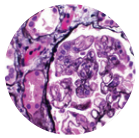
Look for this clinical triad of symptoms[2]**:**



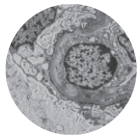
If appropriate, a renal biopsy can reveal TMA[3,11]*



Glomerular/arteriolar thrombi



Basement membrane splitting



Basement membrane formation and early cellular interposition

Adapted from Lusco MA, et al. *Am J Kidney Dis.* 2016;68(6):e33-e34.

*Although renal biopsy is not required for diagnosis of atypical-HUS, it may reveal smoldering cases of TMA in atypical-HUS.[11,12]

Detect and Diagnose

RECOGNIZE THE TRIGGERS

Consider screening for TMA in your AKI patients, especially in the presence of one of the following triggers. If found during your differential diagnosis, consider atypical-HUS[1-4§]

Hypertensive emergency[4]	**Systemic lupus erythematosus (SLE)/lupus nephritis**[2,13,14]
Glomerulonephritis[3]	**Solid organ transplant**[2]

§Other triggers may include but are not limited to: pregnancy, infection and other autoimmune disorders.[2]

MAKE THE DIAGNOSIS—PROMPTLY

Urgently run key tests, including ADAMTS13, to differentiate between atypical-HUS, STEC-HUS, and TTP[2†]

- Run a Shiga Toxin panel to rule out STEC-HUS[1]
- Draw blood for ADAMTS13 testing prior to intervention with PE/PI to avoid future testing challenges[1]
- If ADAMTS13 levels are ≤5% to 10%, it's likely TTP; If >10%, strongly consider atypical-HUS[2‡]

While awaiting ADAMTS13 results, consider the following

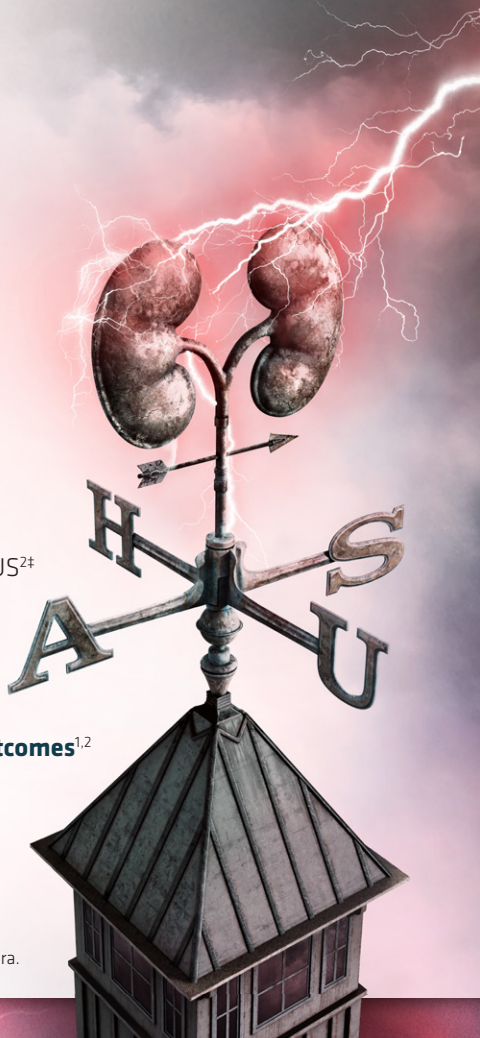
- A platelet count >30 × 10^9/L and/or sCr >1.7 to 2.3 mg/dL almost eliminates a diagnosis of severe ADAMTS13 deficiency (TTP)[2]

Act fast: early clinical intervention is crucial to help patients with atypical-HUS improve their outcomes[1,2]

For a visual diagram of the diagnostic pathway, scan the QR code on the back.

†Other tests may include, but are not limited to, a coagulation panel to rule out DIC and homocysteine, methionine, methylmalonic acid to rule out cobalamin C deficiency.[1,2,15] TMA can also manifest in the presence of other clinical conditions such as HTN emergency, GN, and SLE.[2]
‡5%-10% depending on the assay used.[2]

ADAMTS13=a disintegrin and metalloproteinase with a thrombospondin type 1 motif, member 13; AKI=acute kidney injury; DIC=disseminated intravascular coagulation; GN=glomerulonephritis; HTN=hypertension; PE=plasma exchange; PI=plasma infusion; sCr=serum creatinine; STEC-HUS=Shiga toxin-producing *Escherichia coli*–associated hemolytic uremic syndrome; TTP=thrombotic thrombocytopenic purpura.



Take Initiative and Stay Vigilant

1 **Recognize** TMA early

2 **Conduct** prompt differential diagnosis

3 **Rapidly manage** atypical-HUS

4 **Develop** a strategy for monitoring for TMA recurrence

You have the power to help your patients with atypical-HUS weather the complement storm. Doing so could impact the risk of organ damage, including kidney injury.[1-4]

References: 1. Azoulay E, et al. *Chest*. 2017;152(2):424-434. **2.** Laurence J, et al. *Clin Adv Hematol Oncol*. 2016;14(suppl 11):2-15. **3.** Lusco MA, et al. *Am J Kidney Dis*. 2016;68(6):e33-e34. **4.** Cavero T, et al. *Kidney Int*. 2019;96(4):995-1004. **5.** Halimi JM, et al. *J Nephrol*. 2023;36(3):817-828. **6.** Goodship THJ, et al. *Kidney Int*. 2017;91(3):539-551. **7.** Schaefer F, et al. *Kidney Int*. 2018;94(2):408-418. **8.** Menne J, et al. *BMC Nephrol*. 2019;20(1):125. **9.** Noris M, Remuzzi G. *Nat Rev Nephrol*. 2014;10(3):174-180. **10.** Timmermans SAMEG, et al. *Kidney Int*. 2017;91(6):1420-1425. **10.** Campistol JM, et al. *Nefrologia*. 2015;35(5):421-447. **12.** Wijnsma KL, et al. *Pediatr Nephrol*. 2019;34(11):2261-2277. **13.** Massicotte-Azarniouch D, et al. *Lupus*. 2022;31(10):1175-1185. **14.** AlGhobaishi A, et al. *Ann Med Surg (Lond)*. 2022;81:104541. doi:10.1016/j.amsu.2022.104541 **15.** Loirat C, et al. *Pediatr Nephrol*. 2016;31(1):15-39.

Explore additional resources on recognizing TMA and making the diagnosis of atypical-HUS.

bit.ly/30SlugU

ALEXION AstraZeneca Rare Disease