Quetiapine-induced Thrombotic Microangiopathy
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Introduction
- Thrombotic microangiopathies (TMAs) are rare, complex, and potentially life-threatening conditions.
- They cause platelet microthrombi in any organ, mostly involving the kidneys, brain, and heart.
- The pathophysiology of TMAs includes an autoimmune or complement-mediated process in addition to medication-induced cases.
- Multiple drugs and medications have been reported to cause drug-induced thrombotic microangiopathy (DITMA) via both immune-mediated and non-immune-mediated mechanisms.

Case Description
- Young actively smoking female presented to the hospital with 4 weeks of nausea, vomiting, weakness, intermittent blurring of vision, and had an episode of confusion one day prior to her admission
- No fever, chills, chest pain, abdominal pain, or bleeding
- PMHx significant for bipolar disorder and asthma
- No significant surgical or family history
- Home medications: Albuterol and Quetiapine
- Married, denies illicit drug use and stay at home mother (3 kids)

Physical Exam and Diagnostic Workup
General: Alert, oriented, late to reply, not in any distress
Neuro: No focal deficit, moving all 4 extremities
CVS: S1 S2 normal, no murmur, no JVD
Resp: B/L clear to auscultation
Skin: No rashes or bruises

CBC: Hb 11.9, Platelets 19, WBC 7.2, MCV 82
CMP: Creatinine 3.3, BUN 65, Total Bilirubin 3.2 (Indirect 2.8)
LDH: 3600, Haptoglobin < 8
C3, C4, CH50 level: Normal
ANA Negative, HIV negative, Coombs test negative
PT/INR: Normal, D-Dimer 350
Shiga toxin; Negative, Lyme/Babesiosis: Negative
ADAMTS13 < 3%, ADAMTS inhibitor level HIGH

Results
- She had an elevated PLASMIC score of 6 along with acute and subacute strokes.
- She was emergently planned for plasma exchange treatment along with corticosteroids.
- Her ADAMTS-13 activity was < 3% along with an elevated ADAMTS-13 inhibitor suggestive of acquired TTP.
- The patient responded well to the planned therapy in addition to rituximab and caplacizumab. She made a gradual recovery over 4 weeks.
- She was taking 400 mg of quetiapine, with a progressively increased dose over the last 6 months.
- DITMA secondary to quetiapine was suspected in our patient. Only 1 confirmed case has been described in the literature so far. However, the exact mechanism is currently unclear.

Conclusions
- Early recognition and treatment is the key as the mortality rate reaches up to 90% in untreated cases but is reduced to 10-20% with proper treatment.
- The classic TTP pentad of hemolytic anemia (80-100%), thrombocytopenia (80-100%), renal dysfunction (50-60%), altered mental status (50-70%) and fever (25%) is present in only 20-30% of cases. Waiting for the classic pentad before diagnosing TTP can have grave clinical consequences.
- The presence of hemolytic anemia and thrombocytopenia along with any end organ damage should raise suspicion for TTP.
- Plasmic score is an excellent and validated tool for predicting TTP.
- It is important to be aware of this potentially fatal condition with a commonly prescribed medication in our patient population.

PLASMIC Score
Platelets <30K (1 point), HemoLysis (1 point), Active cancer (1 point), Hx of Solid organ or Stem cell transplant (If No, 1 point), MCV <90fl (1 point), INR < 1.5 (1 point), Creatinine <2 (1 point)
Score <4 (Low risk), Score 5 (Intermediate risk), Score 6-7 (High risk)