Episode 14

In this week's episode, the CPSers introduce their approach to hemolytic anemia!

Problem Representation
A 60-year-old woman presented with the acute onset of dyspnea on exertion, lightheadedness, and jaundice, with laboratory findings of acute anemia and hemolysis.

Schemas
The CPSers' schema for hemolysis focuses on "**localizing the lesion**" and considers disorders of the (1) local environment, (2) RBC plasma membrane, and (3) the RBC itself.
A *practical* approach utilizes the **blood smear** to help differentiate between these different etiologies.

Check out this case[1] in which the blood smear is a critical aspect of making the Dx of a hemolytic anemia.

Diagnosis
The direct Coomb's test was positive for C3 and negative for IgG. The antibody identified was a cold-reacting autoantibody and the patient was ultimately diagnosed with an **IgM-mediated cold autoimmune hemolytic anemia**.

Teaching Points

- Physical signs of anemia include **pallor** (especially of the palmar creases[2] as Reza points out), **resting tachycardia**, and the presence of a **flow murmur**.
- While a **brisk reticulocytosis** is expected in hemolytic anemias, it can be *absent* early in the course of hemolysis, if there is concomitant renal or bone marrow pathology, or in cases of intramedullary hemolysis.
- Autoimmune hemolytic anemia (AIHA) is broadly categorized as *warm* or *cold*, based on the temperature at which the antibodies optimally bind to RBCs.
    - Warm AIHA is caused by **IgG** antibodies (DAT + for IgG)
    - Cold AIHA is typically caused by **IgM** antibodies (DAT negative for IgG, often + for C3)

Clinical Reasoning Pearls

Reza introduces the concept of applying **Venn diagrams** to create overlapping schemas.

When encountering multiple apparently *unrelated* clinical abnormalities, looking for **areas where our schemas overlap** can narrow the range of plausible diagnoses.

Check out this case[3] where the discussant uses Venn diagrams to create a combined schema to reach the diagnosis.

References

1) Dhaliwal G, Mojtahed A, Fogerty AE, Kadauke S, Mack JP. Case 36-2017. A 30-Year-Old Man with Fatigue, Rash, Anemia, and Thrombocytopenia. N Engl J Med. 2017 Nov 23;377(21):2074-2083.
2) Manesh RS, Kohlwes RJ. Palmar Crease Pallor. J Gen Intern Med. 2015 Jul;30(7):1034.
3) Minter DJ, Manesh R, Cornett P, Geha RM. Putting Schemas to the Test: An Exercise in Clinical Reasoning. J Gen Intern Med. 2018 Nov;33(11):2010-2014.