



Hematology Immunology

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Chief Complaint

“Rusty” is a 7 year old spayed female Springer Spaniel with a history of anorexia, severe lethargy and dyspnea.

Rusty



History

- Very weak
- Collapsed on the floor this morning
- Not eating well the past few days
- Vaccinated for DA2PVP and Rabies 30 days ago.

Physical Examination

- 8 % dehydration
- Temperature 40 degrees C
- Tachycardia – HR – 180 BPM
- Tachypnea – 40 breaths per minute
- Weak pulse
- Pale mucous membranes
- Icterus

Icturus



Problem List

- Lethargy/weakness
- Pale mucous membranes
- Dehydration
- Weak pulse
- Icterus
- Febrile
- Anorexia

Rule Outs

- List all the Possible Diagnoses
- *This list is your Rule Out list*

Rule Outs

- Heinz Body Anemia: Onions, Garlic
- Zinc Toxicity – coins
- Immune Mediated Hemolytic Anemia
- Immune Mediated Thrombocytopenia

The Plan

- What is your PLAN ?

Plan

- CBC
- Serum Blood Chemistry
- Urinalysis

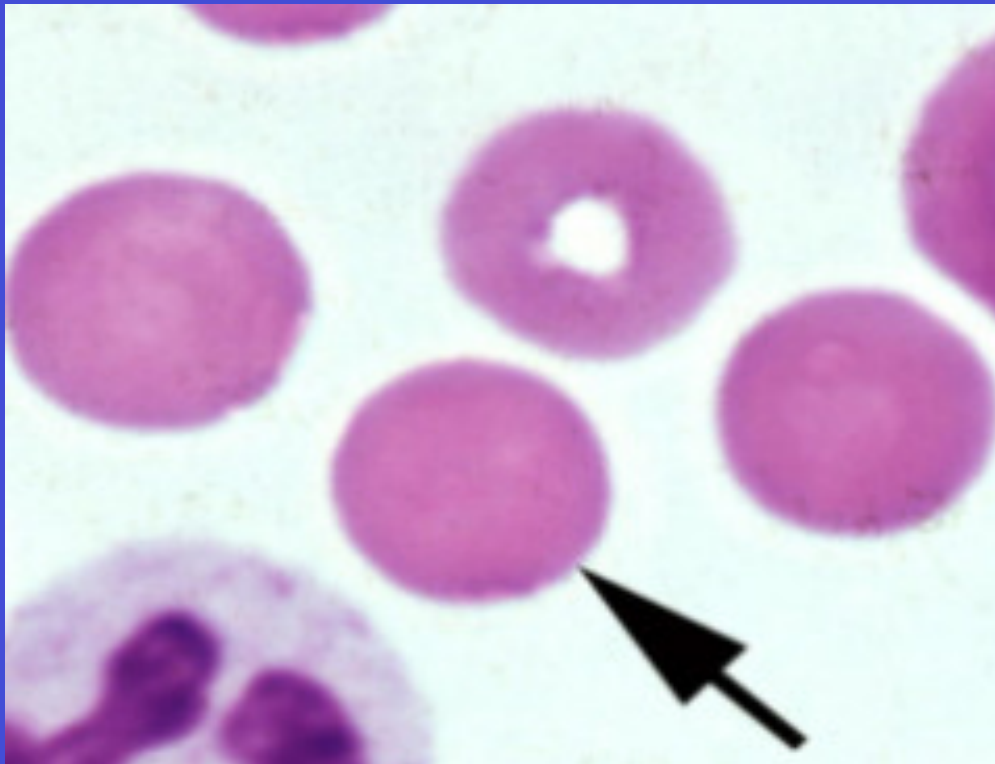
CBC/Chemistry/Urinalysis

- PCV – 25 (37-55)
- RBC – 2.5×10^3 (5.5 – 8.5)
- WBC- 22×10^3 (6-17) Bands - 3×10^3 (0-.3)
- ALT – 200 u/l (10-100)
- Total Bilirubin 2.2 mg/dl (0.0 – 0.9)
- Hemoglobinemia
- U/A: Hemoglobinuria, Bilrubinuria

Blood Smear



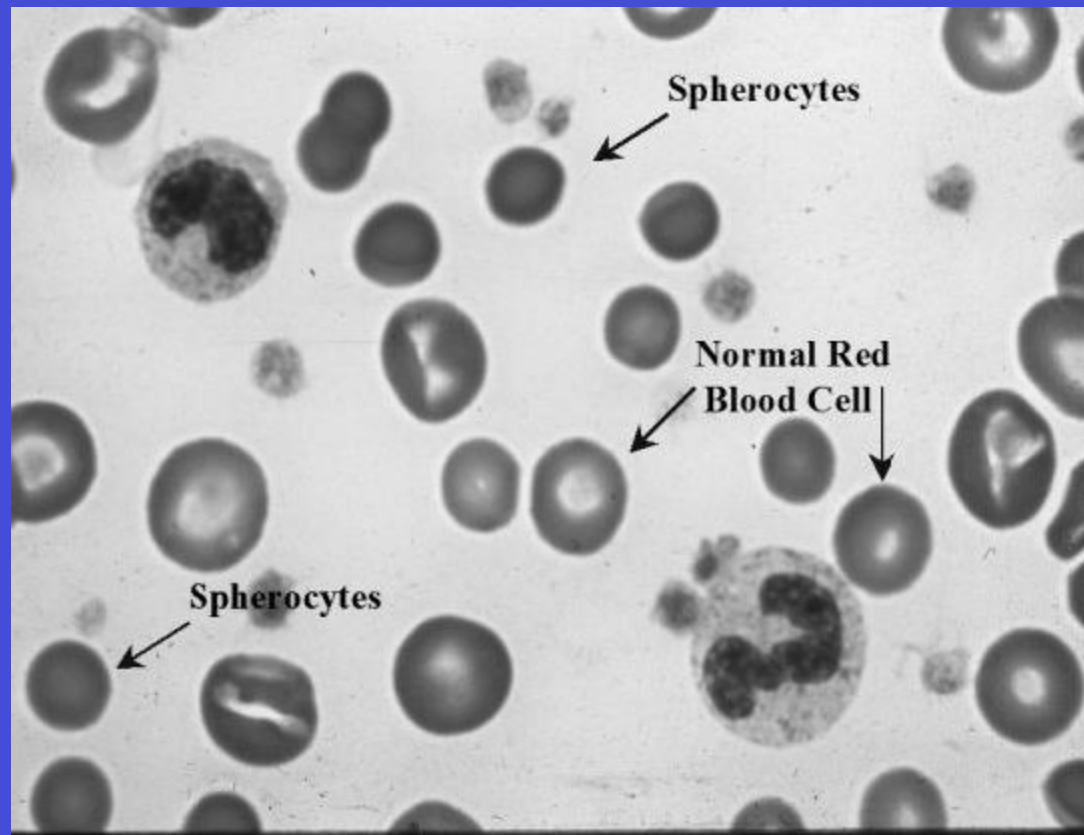
Blood Smear High Magnification



Type of Cells?

- Can you identify the type of cells indicated by the pointer?

Blood Smear - Spherocytes



Assessment of the Lab Findings

- Assessment of the Lab Findings?

Assessment of the Lab Findings

- Low PCV and RBC – anemia
- Many spherocytes
- Hemoglobinuria : RBC destruction
- Bilirubinemia:
 - Liver Disease or
 - RBC destructions
- Increased inflammatory response
 - Leukocytosis, and increased band cells

Rule Outs

- After reviewing the clinical signs and Laboratory findings what is the most likely diagnosis
- Give reasons for you answers

Rule Outs

- **Onions, Garlic Toxicity** – unlikely no history of eating onions or garlic
- **Zinc Toxicity** – unlikely – no history of eating coins
- **Immune Mediated Hemolytic Anemia** – likely because of the anemia, icterus and spherocytes
- **Immune Mediated Thrombocytopenia** – unlikely because no decrease in platelets and no evidence of hemorrhages.

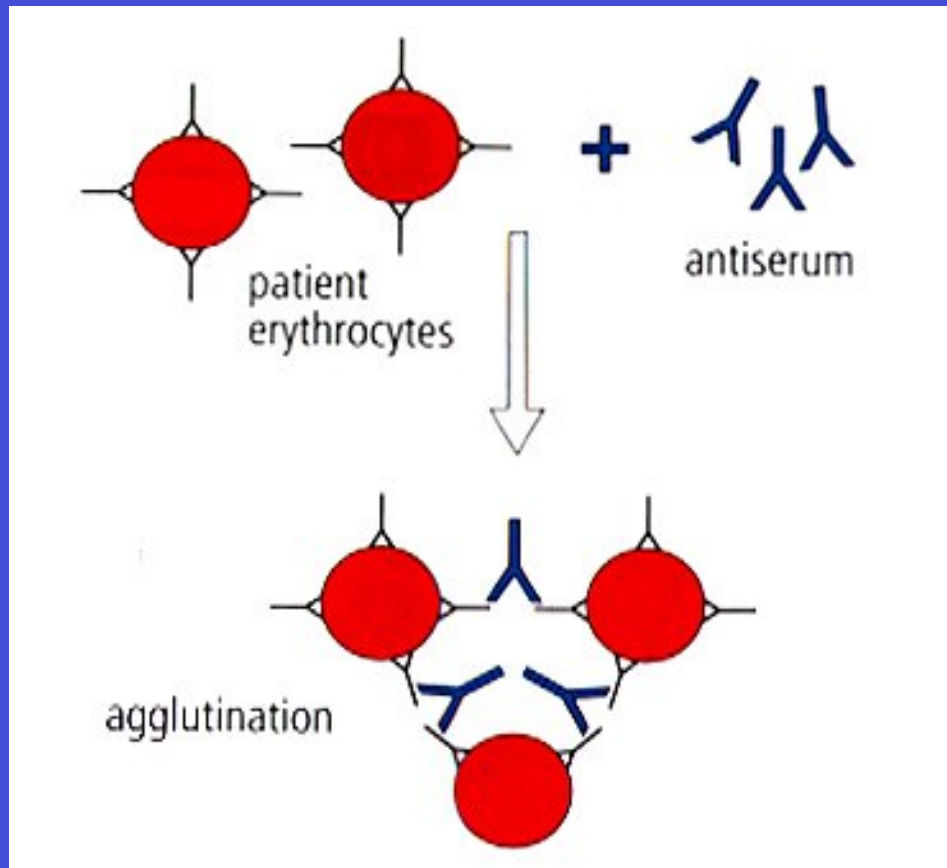
Further additional Tests

- What additional tests would you order to help confirm a diagnosis of IMHA?
- How would a radiograph help to rule out a diagnosis of Zinc Toxicity?

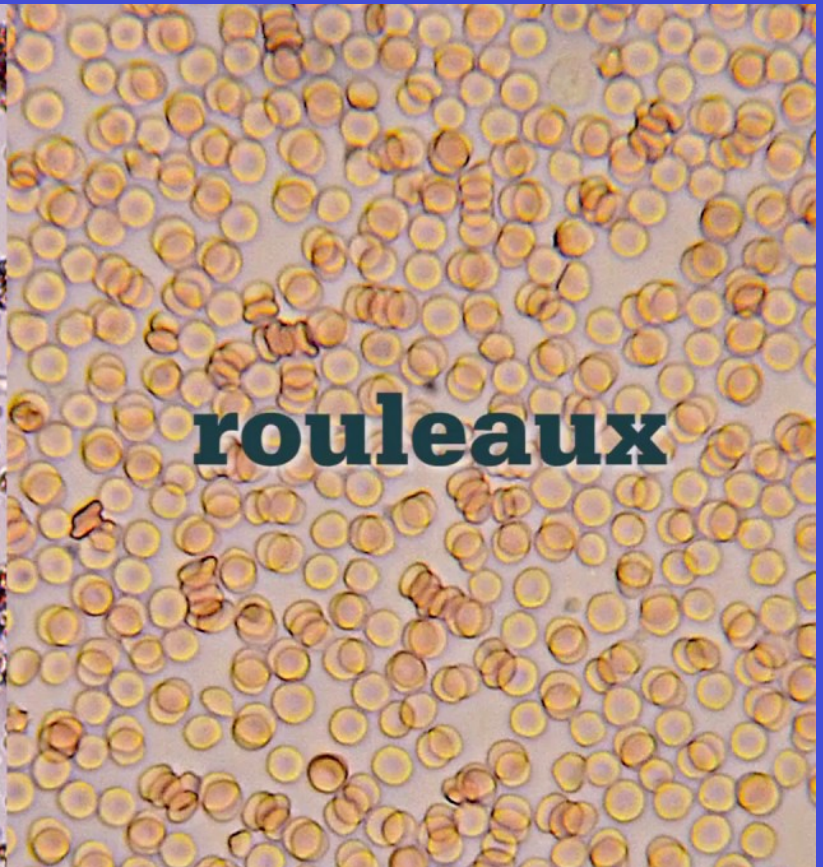
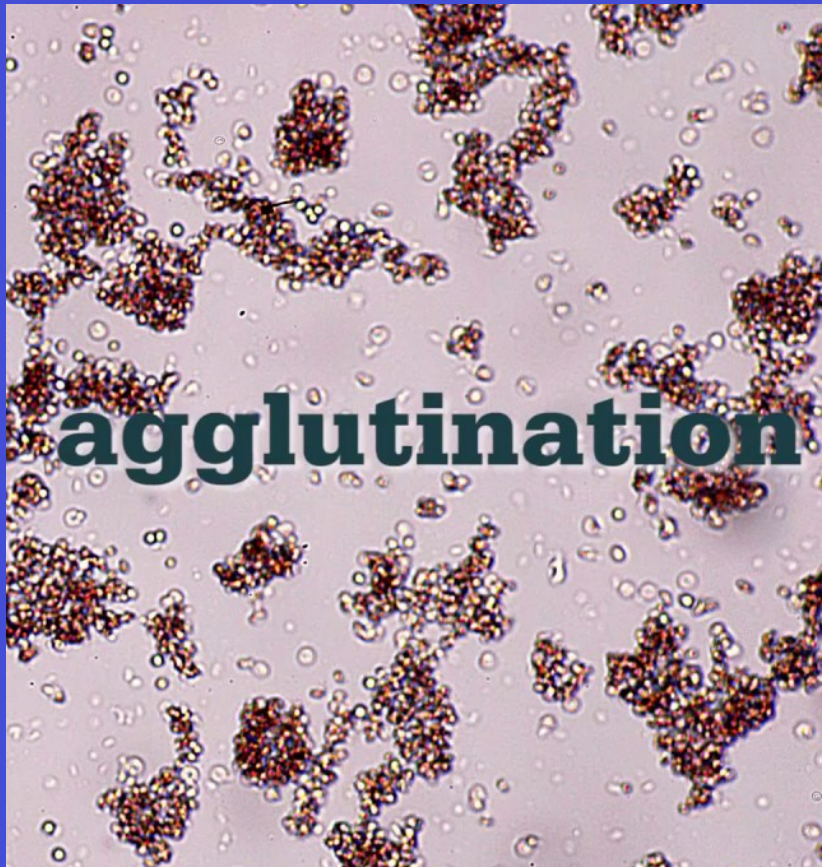
Additional Tests

- Coombs Test – Positive Direct Antiglobulin
- Spontaneous autoagglutination in saline
- Absolute Reticulocyte Count
- Radiograph to view metallic objects suggestive of Zinc toxicity

Coombs Test



Saline Agglutination Test



How to do a Saline Agglutination Test

- https://www.youtube.com/watch?v=p4wF_5DkbOw

Results of Additional Tests

- Positive Coombs Test
- Spontaneous autoagglutination in Saline
- Absolute Reticulocyte Count $> 60,000/u$
- Negative for metallic objects on radiograph

Diagnosis

- What is the most likely diagnosis?
 - Give reasons for your decision

Diagnosis

Immune Mediated Hemolytic Anemia

- Clinical Signs: anemia
- Positive Coombs Test (Positive 75% in IMHA)
- Reticulocytosis
- Spherocytes (common in IMHA)

Treatment

- Aggressive IV Fluid Therapy – LRS
- Blood transfusion
- Corticosteroids – Prednisone
- Cyclophosphamide (Immunosuppressive)

Prognosis?

- What is the prognosis in IMHA?

Prognosis?

- Guarded
- May require treatment for life



The End





























































