Mean Cell Volume (MCV)

Interpretive Summary

Description: Mean Cell Volume (MCV) is a measure of the average size or volume of the red blood cells (RBCs) in whole blood.

Decreased MCV

Common Causes

- Iron deficiency
- Liver disease
  - Portosystemic shunt
  - Liver failure
- Asian dog breed microcytosis (Akita, Shiba Inu, Jindo, Tosa, Chow Chow, Shar Pei)
- Young animals (kittens, foals) typically have lower MCVs than adults

Uncommon Causes

- Abnormal red blood cell morphology
  - Fragmented red blood cells
  - Spherocytes
- Vitamin B6 deficiency
- Low serum sodium

Related Findings

- Iron deficiency
  - Positive fecal ova and parasites
  - Positive fecal occult blood
  - Decreased serum iron, decreased ferritin, normal total iron binding capacity (TIBC)
- Liver disease
  - Increased ALT, ALP, bile acids
  - Decreased BUN, albumin, cholesterol, glucose

Increased MCV

Common Causes

- Regenerative anemia
- FeLV infection
- Artifact
  - Agglutination of RBCs
  - Cell swelling
    - Aged samples
    - Short samples (low blood to EDTA ratio)

Uncommon Causes

- Hereditary Poodle macrocytosis
- Vitamin B12 deficiency
  - Genetic in Giant Schnauzers
  - Severe GI disease
- Myelodysplastic disorders
Related Findings

- Regenerative anemia
  - Increased reticulocytes
- Positive FeLV serology or PCR

Additional Information

Diagnostic Methodology

- Automated hematology analyzers measure the MCV directly; however traditionally the MCV was calculated with the equation: PCV x 10/RBC count (10⁶).

References


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