Glucose (Urine)

Interpretive Summary

Description: Glucosuria is an indicator of increased blood glucose or an inability of the proximal renal tubule to reabsorb glucose.

Decreased Glucose

Common Causes

- Normal
- False negative with dipsticks
  - Ascorbic acid (vitamin C)
  - Formalin
  - Low urine temperature (refrigerated urine)

Increased Glucose

Common Causes

- Diabetes mellitus
- Stress or excitement (cats)
- Pyelonephritis
- Leptospirosis

Uncommon Causes

- Normoglycemic glucosuria
  - Acquired Fanconi syndrome (due to renal tubular toxicosis or ischemia)
  - Congenital Fanconi syndrome and primary renal glucosuria (certain breeds)
  - Familial renal disease (rare)
- Hyperglycemic glucosuria (blood glucose exceeds the renal threshold)
  - Iatrogenic (infusion of fluids with dextrose)
  - Acute pancreatitis
  - Chronic liver disease
- False positive with dipsticks
  - Urinary hemorrhage, with hyperglycemia
  - Oxidizing agents: hydrogen peroxide, chlorine bleach
  - Urine pH >9.0

Related Findings

- Diabetes mellitus
  - Increased blood glucose, cholesterol
  - Ketonuria (in severe cases)
  - Increased fructosamine
  - Increased ALP and ALT often seen
- Pyelonephritis
  - Increased BUN, creatinine, phosphorus
  - Pyuria, hematuria, bacteriuria
  - Positive urine culture
- Leptospirosis
  - Increased BUN, creatinine, phosphorus
Additional Information

Physiology

- Glucose is not normally detected in the urine of dogs and cats.
- The glucose present in the glomerular filtrate is almost completely reabsorbed in the proximal tubules if the cell's maximum transport mechanism (renal threshold) is not exceeded.

Diagnostic Methodology

- Reference laboratories often use the glucose oxidase/peroxidase system for detection of urine glucose.

References


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