

Primary Hypoparathyroidism

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P Profile

- As with primary hyperparathyroidism (see companion article **Primary Hyperparathyroidism**, page 9), primary hypoparathyroidism is one of the most common primary parathyroid gland diseases with excellent prognosis.

Definition & Pathophysiology

- Primary hypoparathyroidism, the absence or destruction of parathyroid tissue, causes a deficiency in parathyroid hormone (PTH).
- This can lead to marked hypocalcemia.
 - Most commonly refers to immune-mediated parathyroid destruction
- Other causes may include parathyroid gland damage or removal following thyroidectomy, parathyroid gland damage by another disease in the neck, or following sudden correction of hypercalcemia (eg, treatment of primary hyperparathyroidism).

Systems

- Neuromuscular signs are most common.
- Cardiac and GI signs may be present.

Incidence & Prevalence

- Reasonably rare
- Reports include two case series of fewer than 30 dogs and many individual reports.^{1,2}

Signalment

Species & Age Range

- Primarily reported in young to early middle-aged dogs and cats but can affect juvenile and geriatric patients

Sex Predilection

- Female dogs are overrepresented.

History

- Presenting signs may be chronic or appear acutely following excitement or exercise.

Physical Examination

- Potential findings:
 - Seizures during examination
 - Episodes of tetany
 - Behavioral disturbances
 - Cataracts (**Figure 1**)
 - Low or decreased body condition score
 - Third eyelid protrusion (cats only)³
 - Bradycardia

Clinical Signs

- Signs are predominantly neuromuscular because of increased neuromuscular tissue excitability secondary to hypocalcemia.
- Approximate frequency of clinical signs^{1,2}:
 - Seizures (65%–75%)
 - Muscle tremors and cramping (55%–65%)
 - Stiff gait and/or lameness (45%–65%)
 - Behavioral changes (50%; eg, aggression, restlessness, hypersensitivity, disorientation)
 - Hyperthermia (35%)
 - Panting (35%)



Signs may be chronic or appear acutely following excitement or exercise.

For More



See the companion article **Primary Hyperparathyroidism** on page 9 of this issue.

MORE ►

PTH = parathyroid hormone

- ❑ Facial pruritus (25%)
- ❑ GI signs (12%–35%; eg, inappetence, weight loss, diarrhea, vomiting)

Dx Diagnosis

Definitive

- Undetectable or barely detectable plasma PTH concentration in a patient with marked hypocalcemia

Differential

- The differential diagnoses for hypocalcemia can vary (Table, page 10 in **Primary Hyperparathyroidism**).
- Immune-mediated primary hypoparathyroidism is the most likely differential with marked clinical hypocalcemia and no history of recent parturition, neck trauma, or surgery.

Laboratory Findings

- Chemistry panel (total hypocalcemia, possible hyperphosphatemia and hypomagnesemia, ionized hypocalcemia)

Other Diagnostics

- Plasma PTH concentration is usually reported as barely detectable to undetectable.
- ECG may rarely reveal bradycardia and prolongation of the ST segment.

Tx Treatment⁴

Surgical

- Surgical treatment is not possible.

Medical

- Emergency treatment of clinical hypocalcemia (see **Prevention & Treatment of Hypocalcemia**, page 12 in **Primary Hyperparathyroidism**)
- Therapy with oral vitamin D, calcium, and calcium gluconate infusion should be initiated via IV infusion as soon as possible.
 - ❑ Calcium gluconate infusion should continue until a total serum calcium concentration can be maintained at low-normal concentration with PO therapy only.

- Total and ionized calcium concentrations should be measured q12–24h while tapering infusion.
 - ❑ Hypomagnesemia may cause poor response and require supplementation.
- Excessive vitamin D supplementation may cause hypercalcemia and renal injury.

↑ Follow-up

- Serum calcium concentrations should be reexamined and measured at least twice weekly for the first 2–3 weeks after discharge, then q1–3mo.
- Vitamin D dosing should be adjusted to maintain low-normal total calcium concentration.
- Lifelong vitamin D therapy is required.
- Calcium treatment is often tapered and stopped after 2–4 months.

***** In General

Relative Cost

- Initial stabilization may be costly.
- Lifelong therapy: \$\$\$\$\$

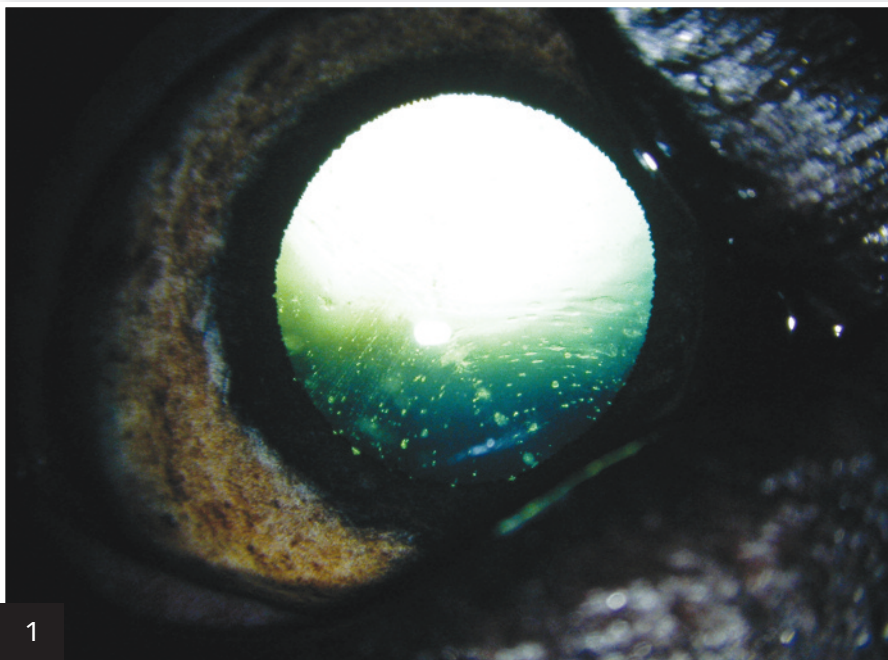
Cost Key

- \$ = up to \$100
- \$\$ = \$101–\$250
- \$\$\$ = \$251–\$500
- \$\$\$\$ = \$501–\$1000
- \$\$\$\$\$ = more than \$1000

Prognosis

- Excellent with lifelong PO therapy if the patient is monitored carefully and initial stabilization is successful ■ **cb**

See Aids & Resources, back page, for references & suggested reading.



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Hypocalcemic cataract in a dog with primary hypoparathyroidism
(Courtesy Stuart Ellis, BVSc, CertVOphthal, MRCVS)