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Chronic Diarrhea in a Himalayan Cat

Terror, a 5-year-old neutered Himalayan indoor cat, presented with a 2-year history of chronic intermittent diarrhea.

HISTORY

At the time of presentation, no other clinical signs were reported by the owner. Terror was not current on his vaccinations. He shared a household with 13 other cats.

EXAMINATION

On initial examination, Terror weighed 6.2 lb, had a rectal temperature of 100.4°F (normal, 100.5°F–102.5°F), heart rate of 184 bpm, and respiratory rate of 28 breaths/min. The remainder of the examination was within normal limits.

DIFFERENTIAL DIAGNOSIS

Based on history and examination, the differentials included secondary causes of chronic diarrhea (eg, exocrine pancreatic insufficiency, chronic pancreatitis, chronic renal failure, hepatic disease) and primary causes of chronic diarrhea (eg, infectious, inflammatory, neoplastic, toxic, mechanical). Because of the intermittent nature of clinical signs, most secondary causes of chronic diarrhea were considered less likely than primary causes.

Initial diagnostics included a CBC, serum biochemistry profile, urinalysis, fecal smear, and fecal flotation; all results were either normal or negative. The cat was dewormed with fenbendazole (50 mg/kg PO q24h for 5 days) but demonstrated no clinical improvement.

CONTINUES

Ask Yourself…

1. How does the list of differentials change after the initial workup?
2. What would be the next reasonable diagnostic steps?
3. Would it have been beneficial to perform other diagnostic steps earlier in the workup? If so, why?

DIAGNOSIS
Tritrichomonas foetus Infection

Polymerase chain reaction (PCR) testing was positive for *T foetus*.

Theoretically, enteric *T foetus* infection in cats can be diagnosed by a direct fecal smear, pouch-culture technique, and PCR (either by nested PCR or real-time PCR). Fecal samples for analysis can be collected freshly after defecation, with a fecal loop, or by flushing the colon with approximately 10 mL of sterile saline (a video of the colonic flushing procedure can be viewed at jodygookin.com).[1] Sensitivity of a direct fecal smear for *T foetus* is extremely low, even when performed by a trained individual. In addition, differentiating *T foetus* and *Giardia* spp trophozoites may be challenging for the generalist; this is especially noteworthy because coinfections of *T foetus* and *Giardia* spp are common.[2]

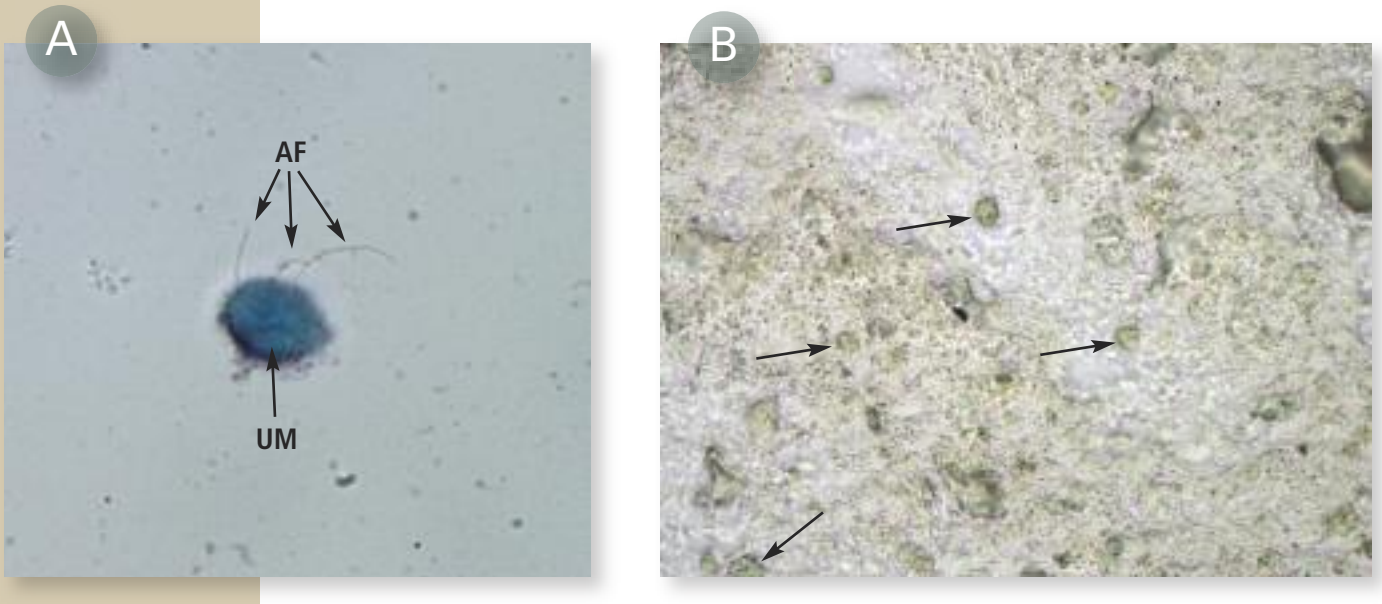
The key to correct identification of *T foetus* trophozoites is recognition of the undulating membrane (**Figure 1**). Also, in contrast to *Giardia* spp cysts (which move in an organized falling-leaf motion), *T foetus* trophozoites move erratically forward. Sensitivity of a culture in a special pouch (**Figure 2**; InPouch TF Feline, biomeddiagnostics.com) is higher than that of a direct fecal smear, but the procedure is cumbersome and sensitivity is still lacking. Approximately 0.1 g of fecal material (about the size of a grain of rice) must be placed in the pouch; the pouch should be examined under a microscope every 2 days for about 11 days. The observation time may be decreased by incubating the pouch at 98.6°F; however, there is a risk for bacterial overgrowth, which can make pouch evaluation difficult.

In sharp contrast, PCR-based methods for detection of *T foetus* DNA in feline fecal material are highly sensitive—above 90%. (**Figure 3**). The sensitivity can be further improved by avoiding cat litter contamination of the sample, preventing dried-out samples, submitting very fresh samples, and submitting combined samples of multiple defecations (**Figure 4**).

CONTINUES

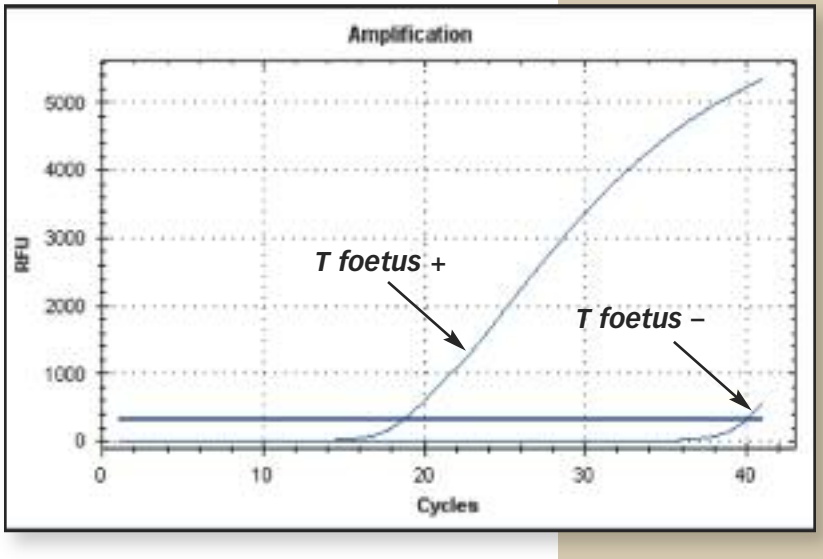
The key to correct identification of *Tritrichomonas foetus* is recognition of the undulating membrane.

1 (**A**) *Tritrichomonas foetus* trophozoite isolated and stained with Diff-Quik (100×). With Diff-Quik stain, trophozoites can be clearly identified, along with the 3 anterior flagella (**AF**). Also, a faint contour of the undulating membrane (**UM**) is visible. (**B**) *T foetus* trophozoites in a fecal smear, unstained (40×). Note that without staining *T foetus* cannot be definitively identified. There are several objects (**arrows**) that could potentially be perceived as *T foetus*, but the undulating membrane cannot be visualized clearly.

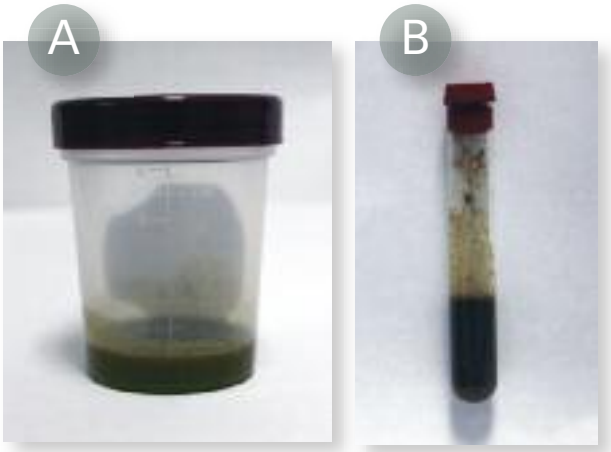


2 InPouch TF Feline culture system (biomeddiagnostics.com) as it is being loaded with fecal material. Note the small amount of fecal material that should be placed into the pouch (approximately the size of a grain of rice).

3 Curves for a real-time PCR assay for detection of *Tritrichomonas foetus* DNA in fecal samples from cats. Note the strong amplification curve seen at 19 cycles, indicating the presence of *T foetus* DNA (*T foetus* +). In comparison, the weak amplification curve is from a negative control sample that does not contain *T foetus* DNA (*T foetus* –).



4 Some commercial laboratories offer PCR-based assays for the detection of *Tritrichomonas foetus* DNA in freshly collected fecal samples. Because assay procedures may vary, it is important to verify ideal sample submission for that specific lab and assay. The Gastrointestinal Laboratory at Texas A&M University prefers a freshly collected fecal sample (no contamination) placed into a fecal cup (**A**) or red-top tube (**B**) (or other small sterile container), refrigerated until shipment, and shipped with an ice pack by overnight carrier. Care should be taken to ensure that the sample does not freeze (no dry ice) during shipping.



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RFU = relative fluorescence units

Tx AT A GLANCE

- Correct identification of *T foetus* requires recognition of the undulating membrane.
- *T foetus* trophozoites move erratically forward, while *Giardia* spp trophozoites move in an organized falling-leaf fashion.
- PCR-based methods are highly sensitive for *T foetus* DNA in cats.
- Standard therapy in cats is ronidazole at 30 mg/kg PO q24h for 14 days.

There is no known or suspected zoonotic potential for *Tritrichomonas foetus*, even in immunocompromised individuals.

TREATMENT

Standard therapy for cats with *T foetus* is ronidazole at 30 mg/kg PO q24h for 14 days. This dosage may not be be sufficient in some cats and another treatment course with ronidazole at 30 mg/kg q12h may be necessary. However, it is crucial to note that ronidazole is not approved for use in cats (though it is freely available through many compounding pharmacies) and higher dosages have occasionally led to neurologic signs, which resolved once medication was discontinued.[3] Some cases of *T foetus* resistance to ronidazole have been documented recently, so it is advisable to obtain the client's informed consent before prescribing this drug.[4] At present, no other therapeutic agent is known to reliably clear *T foetus* infection in cats.

There are no special dietary recommendations for cats infected with *T foetus* and the author usually recommends an age- and body condition–appropriate super premium cat food.

Of note, many cats can show improvement of clinical signs and even spontaneous clearing of the organism; however, this can take a long time and, in some cases, years. During this time the cat remains a reservoir of infection for other cats.

At this point there is no known or suspected zoonotic potential for *T foetus*, even in immunocompromised individuals.

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

? Did You Answer?

1. Most secondary causes of chronic diarrhea have been excluded, with the exception of exocrine pancreatic disease. Other primary causes of chronic diarrhea are *T foetus, Cryptosporidium parvum*, or *Giardia* spp infection.
2. Measurement of serum concentrations of cobalamin, folate, feline trypsin-like immunoreactivity (fTLI), and feline pancreatic lipase immunoreactivity (fPLI; as measured by Spec fPL Test, idexx.com); PCR assay for *T foetus*; and ELISA or IFA for *Giardia* spp are the best additional diagnostic steps to take.
3. Given the clinical importance of *T foetus* in cats with chronic diarrhea, especially since this cat would be considered at high risk (ie, multicat household, purebred cat), it would have been reasonable to perform a more sensitive diagnostic test for *T foetus* than a direct fecal smear earlier during the diagnostic evaluation, such as performing a PCR assay or pouch culture. PCR testing would be preferable, however, as the sensitivity is much higher and the turnaround time is faster, leading to a more rapid initiation of therapy.

fPLI = feline pancreatic lipase immunoreactivity, fTLI = feline trypsin-like immunoreactivity