

# *Cryptosporidium* and *Giardia* Infections in Children: A Review



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## KEYWORDS

• *Cryptosporidium* • Diarrhea • Children

## KEY POINTS

- Consider *Cryptosporidium* in any child, particularly younger than 2 years old, with severe acute watery diarrhea.
- Diagnosis of *Cryptosporidium* can be made by acid-fast microscopy, enzyme-linked immunosorbent assay (ELISA), or immunofluorescent antibody staining, or molecular diagnostics.
- Diarrhea due to *Cryptosporidium* is usually self-limited in 1 to 2 weeks but vigilance is needed in immunocompromised patients in whom the clinical course may be protracted and severe.
- Nitazoxanide is approved for treatment of *Cryptosporidium* in immunocompetent children older than the 1 year old.
- Inquire about possible sources of exposure, such as recreational water and close contacts, with similar symptoms because outbreaks occur and *Cryptosporidium* and *Giardia* are reportable disease in many jurisdictions and Consider giardiasis in cases of prolonged diarrhea, particularly in travelers.

## CRYPTOSPORIDIUM

*Cryptosporidium* is an apicomplexan protozoan parasite that was first identified as a human pathogen in 1976 in a 3-year-old child with severe acute enterocolitis<sup>1</sup> (Figs. 1 and 2). Another publication later that year described an immunosuppressed adult with a similar presentation of severe diarrhea without clear cause.<sup>2</sup> In both instances, biopsy of intestinal tissue with electron microscopy was performed and lesions showed mucosal injury and tiny 2 to 4  $\mu\text{m}$  organisms on the intestinal epithelial surface that

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No Commercial or Financial Conflicts of Interest. No funding sources.

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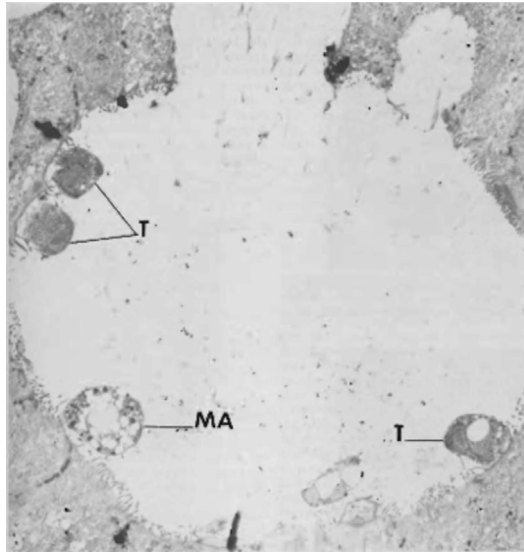
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Pediatr Clin N Am 64 (2017) 837–850  
<http://dx.doi.org/10.1016/j.pcl.2017.03.014>

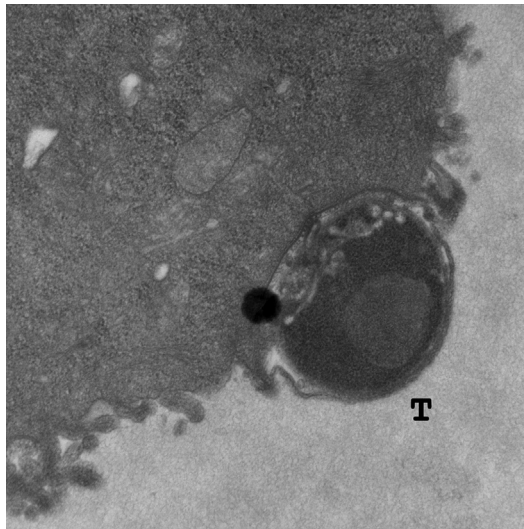
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**Fig. 1.** The original photomicrograph of a rectal biopsy showing trophozoites (T) and macrogametes (MA) of *Cryptosporidium* attached to the epithelial surface. (Data from Nime FA, Burek JD, Page DL, et al. Acute enterocolitis in a human being infected with the protozoan *Cryptosporidium*. *Gastroenterology* 1976;70:592–8.)

were determined to be *Cryptosporidium* based on morphology. These are now known to be intracellular forms, such as trophozoites, schizonts, and gametes. When these forms produce oocysts that are excreted into the environment then transmission to other hosts can continue.



**Fig. 2.** High-power electron micrograph of *Cryptosporidium*. Trophozoite form (T) with an internal vacuole is present, after infection of HCT-8 intestinal epithelial cells. The dark black dot is artifact. (Courtesy of Christopher Huston, University of Vermont.)

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