

CRYPTOSPORIDIOSIS

AGENT: Genus: Cryptosporidium, it remains unsettled whether more than one species exists. Extracellular protozoal organisms - similar to coccidia. Taxonomy of species somewhat controversial but considered to be infective across species lines.

SPECIES: Ruminants & swine primary risk.

RESERVOIR AND INCIDENCE: Rodents, birds (particularly turkeys and chickens), ruminants, fish, reptiles, cats, dogs, rabbits, NHP's. Children over 2 years of age, animal handlers, travelers, homosexual men, and close personal contacts of infected individuals (families, health care and day-care workers) may be particularly likely to be infected. More than a dozen outbreaks have been reported in day-care centers around the world. Two major waterborne outbreaks have been documented. Cryptosporidium antibodies were detected in the serum of 20 of 23 cats (87%) suggesting that the exposure rate may be high.

TRANSMISSION: Fecal-oral transmission is from animals to humans or humans to humans; waterborne transmission is also important. Oocysts passed in stool are fully sporulated and infectious; infection occurs as a result of their ingestion. In humans and animals, the full life cycle occurs within a single host. The organisms attach to the microvillous borders of enterocytes of the small bowel and also are found free in mucosal crypts. The host cell membrane deteriorates, leaving the parasitic membrane in direct contact with epithelial cell cytoplasm. The organisms do not, however, invade the tissues.

DISEASE IN ANIMALS: Severe watery diarrhea in neonatal calves and lambs. In turkeys and chickens, the parasites are reported to occur in the sinuses, trachea, bronchi, cloaca, and bursa of Fabricius. The respiratory disease causes coughing, gasping, and airsacculitis. In reptiles, cryptosporidiosis is frequently reported in association with postprandial regurgitation. The organism affects the GI mucosa, resulting in marked thickening of the rugae and loss of segmented motility.

DISEASE IN MAN: In immunocompetent persons, infection varies from no symptoms to mild enteritis to marked watery diarrhea (up to 10 stools daily) without mucus or gross or microscopic blood. Low-grade fever, malaise, nausea, vomiting, abdominal cramps, anorexia and weight loss may occur. The infection is generally self-limited and lasts a few days to about 2 weeks. **In immunologically deficient patients, the illness is characterized by profuse (up to 15L daily), cholera-like diarrhea and by fever, severe malabsorption, marked weight loss, and lymphadenopathy.** In AIDS, infection may involve any part of the GI tract, and multisystemic involvement has been described, especially involving the respiratory tract.

DIAGNOSIS: Diagnosis is by detection of oocysts in stool by a variety of flotation or concentration methods or by mucosal biopsy, followed by special staining methods that use modifications of an acid-fast stain (routine fecal staining methods do not detect the

organisms). Three stools should be examined over 5 days. A fluorescein-labeled IgG monoclonal antibody test has recently become available to detect oocysts.

TREATMENT: No successful treatment has been developed so far. Generally, no treatment other than supportive is needed in immunocompetent persons since it is self-limiting. In immunoincompetent persons, spiramycin, zidovudine (AZT), paromomycin, octreotide, and eflornithine have been reported of value.

PREVENTION/CONTROL: Personal hygiene. Careful handwashing by those in contact with any animals with scours.

BIOSAFETY LEVEL: BL-2

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