from retrovirus-infected CD4+ T cells. Science 242:426–430
Tsai CC, Tsai C-C, Sligh J, Roodman S (1989) Kaposi’s sarcoma-like cell line from simian AIDS with retroperitoneal fibromatosis (RF) associated with type D retrovirus (SRV-2) infection. Lab Invest 60:98A
Tsai C-C, Wu H-N, Tsai CC (1990b) Phenotypic characterization of Kaposi’s sarcoma-like tumor associated with SAIDS-D retrovirus in pigtailed macaques. 8th annual symposium on nonhuman primate models for AIDS, New Orleans, November 1990, p 121

**Mycobacterium avium-intracellulare** Infection

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**Synonyms.** Avian tuberculosis, avian mycobacteriosis, nontuberculous mycobacteriosis, atypical mycobacteriosis, Battey bacillus infection, Runyon type III mycobacterial infection.

**Gross Appearance**

*M. avium-intracellulare* infection in nonhuman primates begins as a primary infection of the small and large intestines and draining lymph nodes. Early in the course of the infection, lesions may not be discernible grossly. In advanced cases, however, lesions may become widely disseminated and involve the spleen, liver, kidney, heart, lungs, and other organs. The affected segments of small and large bowel have roughened serosal surfaces and raised, yellow-white, 0.5–2.0 mm, granular nodules within the serosal and mesenteric lymphatics. The intestinal wall is firm, thickened, and the mucosa often contains coarse yellow folds. The...
mesenteric and ileocolic lymph nodes are diffusely enlarged, firm, yellow-white, and contain no gross evidence of necrosis. The liver may be somewhat enlarged and have areas of yellow-tan discoloration. In advanced cases the spleen is enlarged, firm, and contains less than the normal amount of blood. Although *Mycobacterium avium-intracellulare* infections in nonhuman primates are typically characterized by lack of tubercle formation, in several reports tubercle formation has been described (Holmberg et al. 1982; Goodwin et al. 1988; Bellinger and Bullock 1988). In one of these cases, the disease was also unusual in that the lesion involved the skin only (Bellinger and Bullock 1988).

**Microscopic Features**

Microscopically, the lamina propria of the small intestine, cecum, and colon and infiltrated with diffuse sheets of large epithelioid histiocytes with finely vacuolated cytoplasm (Fig. 57). A feature that can often be used to distinguish *M. avium-intracellulare* infection from tuberculous forms of mycobacteriosis is the lack of caseous necrosis in the granulomatous infiltrates. There are, however, a few reports in which typical tubercles have been found in monkeys from which *M. avium-intracellulare* has been cultured (Holmberg et al. 1982; Goodwin et al. 1988; Bellinger and Bullock 1988). Lymphocytes are usually not a prominent feature of this form of granulomatous enterocolitis either. Multinucleate giant cells are rarely found in the typical epithelioid cell infiltrates, but neutrophils may be present in areas where the surface epithelium has been breached or in areas where epithelioid cells

*Fig. 57* (above). Ileum, *Macaca mulatta*, *Mycobacterium avium-intracellulare* infection. The lamina propria has been extensively infiltrated by diffuse sheets of large epithelioid histiocytes that have caused blunting and fusion of intestinal villi. Note the lack of caseous necrosis and the intact surface epithelium. H and E, ×100

*Fig. 58* (below). Higher magnification of Fig. 57. Note the large, foamy, epithelioid histiocytes that expand the lamina propria of the intestinal mucosa, the single multinucleate giant cell, and the scattered neutrophils within the infiltrate. H and E, ×250