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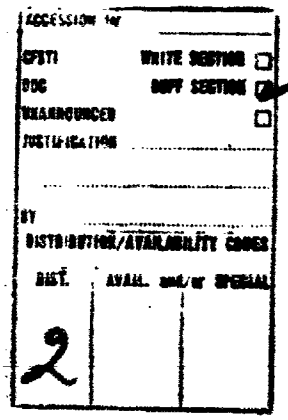
TECHNICAL MANUSCRIPT 609

GASTRODISCOIDES HOMINIS IN A RHESUS MONKEY WITH RELATED INTUSSUSCEPTION OF THE COLON

James G. Fox
William C. Hall

MAY 1970

DEPARTMENT OF THE ARMY
Fort Detrick
Frederick, Maryland



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James G. Fox

William C. Hall

Animal Farm Division
AEROBIOLOGY & EVALUATION LABORATORIES
and
Pathology Division
MEDICAL SCIENCES LABORATORIES

Project none

May 1970

In conducting the research described in this report, the investigators adhered to the "Guide for Laboratory Animal Facilities and Care," as promulgated by the Committee on the Guide for Laboratory Animal Facilities and Care of the Institute of Laboratory Animal Resources, National Academy of Sciences-National Research Council.

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ABSTRACT

This case report describes a monkey with protracted diarrhea, emaciation, and marked dehydration. Necropsy of the animal revealed an intussusception of the colon, multifocal necrosis of the intestinal mucosa, and a large number of Gastrodiscoides hominis in the ileum, cecum, and colon.

GASTRODISCOIDES HOMINIS IN A RHESUS MONKEY WITH RELATED INTUSSUSCEPTION OF THE COLON*

The fluke Gastrodiscoides hominis has been recovered from the intestinal tract of man, swine, and rat, as well as the mouse deer and the subhuman primate.[1-3] Recent parasite surveys of monkeys examined at necropsy tabulated a 21.4% incidence of G. hominis in 1,201 cynomolgus (Macaca fascicularis).[4] No ova were recovered in another group of 303 cynomolgus, nor in 646 rhesus (M. mulatta), by fecal flotation or necropsy.[6]

The parasite commonly infests the lower colon in large numbers, and its presence in the colon may cause a chronic mucous diarrhea or no detectable clinical abnormalities.[6] A description of the lesions produced in monkeys by G. hominis infestation has not been reported. This report describes a rhesus monkey with severe diarrhea for 2 days, followed by 2 days of rectal tenesmus, marked dehydration, and eventual death. Necropsy of the animal revealed multifocal necrosis of the intestinal mucosa, extensive intussusception of the colon, and a large number of G. hominis in the ileum, cecum, and colon.

A 2-year-old M. mulatta weighing 2.4 kg arrived at the primate colony on March 12, 1969, and 4 days later was listless and anorectic and had diarrhea. It was isolated and treated with electrolyte dextrose solution** and furazolidone kaolin-pectate mixture by stomach tube.*** Electrolyte dextrose solution was placed in the cage for free choice consumption. The diarrhea continued for another day, and on the 3rd and 4th day the feces were scant, mucoid, and blood-tinged. Tenesmus was observed and rectal prolapse was replaced manually on two occasions during this 4-day period. Fecal cultures were made, but no pathogenic bacteria were isolated. A direct fecal smear was negative for parasitic ova. The animal's condition deteriorated, and 5 days after treatment was instituted the animal died.

The ileocecal valve was telescoped into the colon in an intussusception that involved all but the terminal 4 inches of colon. The involved portion of intestine was enlarged and the intestinal wall affected, varied in color from a blanched mottling of the serosa to a diffuse gradation of dark red and black tissue. Reddish flukes, approximately 5 by 3 mm, numbering in excess of 200, were attached to the mucosa of the distal ileum, cecum, and colon (Fig. 1). Mechanical removal of the flukes exposed small red areas 1 to 2 mm in diameter on the intestinal mucosa.

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** Vetrad O, Don Hall Labs, Portland, Oregon.

*** Furoxone, brand of furazolidone, Eaton Labs, Division of The Norwich Pharmacal Company, Norwich, New York.

FIGURE 1. G. hominis Attached to the Mucosal Lining of the Colon.

Most flukes detached after formalin fixation and were found free in the intestinal lumen. Ova were not found in any sections of parasites. An occasional fluke remained attached to the mucosa (Fig. 2). The lesions attributed directly to the parasite were focal. Semi-circular convex depressions in the mucosa were occasionally seen and were probably due to attachment of the fluke by the posterior sucker (Fig. 3). The mucosa of the affected areas showed various degrees of hyperemia, loss of surface epithelium, and necrosis. Neutrophils replaced the outer half of some of these foci and extended deeply into the crypts. Necrosis was limited to the mucosa. The submucosa was focally thickened by fibrous tissue and infiltrated with lymphocytes and plasma cells.

FIGURE 2. Attachment of the Posterior Sucker of C. hominis to the Mucosa of the Colon. Note the loss of surface epithelium.

FIGURE 3. Attachment Site of C. hominis to the Colon. There are mild necrosis and hyperemia of the mucosa and chronic inflammation of the submucosa.

The intussusception was characterized by necrosis of the intestinal mucosa and submucosa and severe vascular congestion of all parts. Mesenteric lymph nodes were necrotic, congested, and edematous.

Other lesions included a giant cell pneumonia, chronic bronchiolitis secondary to pulmonary acariasis, giant cell sialadenitis, sarcosporidiosis, and a moderate nephrosis.

Gastrodiscoides hominis can be diagnosed clinically by demonstrating the characteristic operculated ova, 150 by 72 μ, in the feces. In this case the flukes were immature and no ova could be found on fecal examination. A similar case in a rhesus monkey was reported by Graham in 1960.[1] Gastrodiscoides hominis is a member of the family Paramphistomidae and identification is made by its size, scoop-shaped appearance, ventroterminal suckers, and site of infection, usually the colon and cecum[7] (Fig. 4).

Infected laboratory primates are not considered a public health hazard because of the need for an intermediate snail host. Most animals infected with this parasite show only a chronic diarrhea or no apparent ill effects. Honjo et al.[8] noted in cynomolgus (M. fascicularis) that no special abnormality was detected in the general health of severely infested monkeys. The monkey described in the present case suffered from severe diarrhea, complicated secondarily by a fatal, necrotic intussusception. Although the individual fluke produced only a focal lesion, the massive infestation of flukes produced a marked disruption of the intestinal mucosa. It has been reported that enteritis, hypermotility, and focal or nodular lesions produced by intestinal parasites can initiate an intussusception.[9] In this case the flukes found in the intussuscepted area of the colon caused confluent multiple foci of chronic irritation that contributed to the telescoping effect of the involved colon.

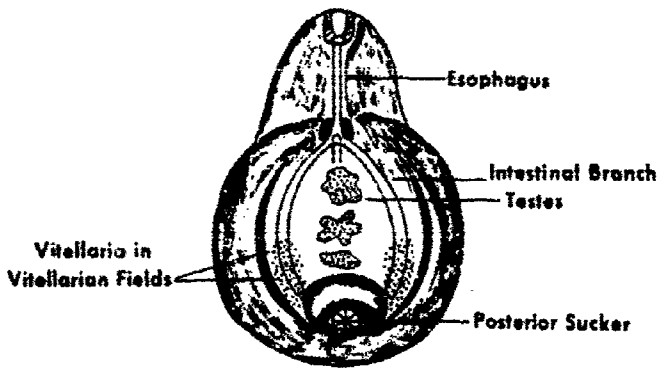

FIGURE 4. Gastrodiscoides hominis. Family, Paramphistomidae; large, thick worms, often red when alive.

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14. Key Words

Gastrodiscoides hominis
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