among non-addicts but were equally common among those addicts who developed uncomplicated acute hepatitis as among those who developed fulminant hepatitis.

Comment

Though we cannot presume that they are present in all infected subjects, antibodies to AIDS associated retroviruses seem to represent their past or present infection.⁴ Moreover, the immunofluorescence test constituted a sufficiently sensitive and specific method and valid alternative to the Western blot procedure.³ Available information indicated that AIDS associated retroviruses replicate preferentially in the OKT4 positive lymphocytes, inducing a strong cytopathogenic effect in vitro on these cells, which are crucially decreased in AIDS, and interfering with the immunological balance of the host.³ Theoretically, therefore, their infection may affect the development of a fulminant form in association with a hepatitis virus.

Our findings show basically the same prevalence of antibodies against AIDS associated retroviruses in both uncomplicated and fulminant viral hepatitis in drug addicts. Even considering that, as in a few subjects with AIDS, these antibodies are not detectable in a few cases of fulminant hepatitis, our observations seem to exclude any responsibility of AIDS associated retroviruses in determining this condition.

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Family outbreak of cryptosporidiosis

Cryptosporidium spp are a fairly common cause of gastroenteritis in both immunocompetent and immunosuppressed subjects.¹ Transmission of infection may occur from direct contact with infected animals,² though many patients have no such history. The possibility of food and water borne infection and direct person to person transmission is being explored. We report a family outbreak of cryptosporidiosis that was probably acquired from direct animal contact and spread within the family.

Patients, methods, and results

A family of three children, two parents, and two grandparents, on holiday in Devon, visited a dairy farm on 8 April 1985 that was open to the public. Two of the family (cases 5 and 7) drank raw milk on the farm as milk shakes. The family witnessed the birth of twin calves, standing within 2.7 m (3 yards) of the birth. Both calves were heavily contaminated with faeces. The family were also in close contact with kid goats and lambs.

From 11 April to 20 April one child (case 1) suffered from diarrhoea, with three to four watery pale stools each day that had an offensive smell, and sporadic abdominal pain. No blood or mucus was present in the stool. Also on 11 April the grandmother (case 2) developed vomiting and malaise, and by the next day she suffered from nausea and severe pain in the right iliac fossa but had no diarrhoea. She was admitted to hospital with suspected appendicitis, but symptoms subsided over 48 hours. On 16 April, however, she had abdominal pain and diarrhoea (six episodes) for one day. Also on 16 April a child (case 3) who shared the grandmother's bedroom vomited and had abdominal pain and malaise. Two days later he developed diarrhoea that gradually worsened until 25 April. On 27 April another child (case 4) vomited and later developed diarrhoea and was unwell and lethargic for two to three days. On 8 May the mother (case 5), in the 38th

week of pregnancy, developed upper abdominal pain and on 9 May explosive profuse water diarrhoea with the characteristic odour of the other cases. Symptoms subsided before delivery on 22 May of a healthy infant, who did not develop diarrhoea.

Faecal smears were stained for cryptosporidium oocysts by the modified Ziehl-Neelson method.³ Positive results from stools were confirmed by Rhyl Public Health Laboratory. Smears of stools from three patients (cases 3, 4, and 5) obtained on days 9, 10, and 3 after onset of symptoms, respectively, were positive for oocysts (table); but oocysts were not detected by day 18 in all three. Smears of stools from two patients (cases 1 and 2) obtained 36 and 34 days after onset were negative for oocysts. Scanty oocysts were identified in the mother's (case 5) stool sample two days before delivery, and stool samples three and 20 days after delivery were negative for oocysts. The infant remained asymptomatic, and oocysts were not seen in samples obtained on days 1, 2, 4-6, 8, 9, 15, and 21.

Details of family members by age, sex, onset of symptoms, and results of stool samples

Case No	Member of family	Age (years)/Sex	Date of onset of symptoms	Days after onset, or date, when stool samples collected	Positive stool samples (days after onset)
1	Child	5/F	11 April	36	
2	Grandmother	56/F	11 April	34	
3	Child	6½/M	16 April	9, 17, 25	9
4	Child	2½/M	27 April	10, 18, 24	10
5	Mother	33/F	8 May	3, 7, 13, 18, 35	3, 7, 13
6	Father	34/M		15 May	
7	Grandfather	66/M		15 May	

Initially, stool samples were examined for shigella, salmonella, and campylobacter by standard methods and all yielded negative results. Antibodies to campylobacter were not detected in serum from the grandmother (case 2) obtained 34 days after onset of symptoms.

Faecal samples from animals on the farm were not obtained at the time of the outbreak, but samples taken from cattle seven weeks later were negative for cryptosporidium.

Comment

Three confirmed and two probable cases of cryptosporidiosis occurred after a visit to a dairy farm. Symptoms were typical of cryptosporidiosis in immunocompetent subjects.⁴ The source of infection for two patients (cases 1 and 2) could have been direct contact with farm animals; calves are a known source of infection.² If this did occur the incubation period in both was three days. One patient (case 3) could have been infected at the same time with an incubation period of eight days, though secondary spread from the patient in case 1 could have occurred. The infection of two patients (cases 4 and 5), who were ill 16 and 27 days after the first cases, probably resulted from secondary spread within the home. One patient (case 4) developed symptoms nine days after onset of diarrhoea in case 3 and another (case 5) became ill 11 days after onset of diarrhoea in case 4.

We were concerned that the mother could have transmitted infection to her newborn infant, but excretion of oocysts was not detected at delivery. Further excretion was not stimulated by the stress of delivery, and transmission to the infant was not detected.

This outbreak suggests that cryptosporidium infection can cause illness with severe abdominal pain before onset of diarrhoea, mimicking appendicitis, as in infections with campylobacter, yersinia, and some strains of escherichia. There was evidence of spread within the family between siblings and from child to mother, and the incubation period ranged from three to 11 days.

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