

DETECTION RATES OF ROTAVIRUS ANTIGEN FROM DIARRHEAL PATIENTS IN LAO PEOPLE'S DEMOCRATIC REPUBLIC

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Abstracts: The detection rate of rotaviruses from diarrheal stools in Lao People's Democratic Republic (Lao PDR) was studied in the period from 1994 to 2003. Rotavirus antigen was detected using latex agglutination kit. The average detection rate was 2.4%, or 18 of 738 cases examined in total. Rotavirus was not detected from 175 cases examined in 1995, 1998, 2000 and 2003, but 8 of 85 cases (9.4%) examined in 1997 were positive for rotavirus. The detection rate was 6.0% in the age group younger than 2 years and 0.6% in the age group older than 2 years. These detection rates were markedly lower than those in neighboring countries such as Vietnam and Thailand.

Rotaviruses are a major cause of diarrhea in infants and young children. The infections are also common in adult. Rotavirus infections are frequently seen throughout the year in tropical areas, but they are predominant during the winter season in the temperate zone. On the basis of reported data, the detection rate of rotavirus from pediatric diarrhea is about 30% on average [1-11]. A high frequency of rotavirus infection has been reported in Vietnam and Thailand, countries neighboring Lao PDR. Some reports show that the detection rate of rotavirus in pediatric diarrhea was 50 to 60% in Vietnam and 30 to 40% in Thailand [3,7,8]. Although available from many other countries, no data on the detection frequency of rotavirus from diarrheal stools has been reported from Lao PDR. In the present paper, therefore, we present the detection rate of rotavirus from the stools of diarrheal patients in Lao PDR over the past decade.

Stool samples submitted to our Laboratory (Center for Laboratory and Epidemiology, Ministry of Health, Lao PDR) for analysis of enteropathogens from a number of hospitals and clinics in Vientiane were examined. The samples were collected from diarrheal patients in the period from 1994 to 2003. All samples were taken in plastic containers, and a total of 738 stool samples were examined. Rotavirus was detected using a commercially available latex agglutination kit (MICROGEN, Bioproducts LTD., England UK). Watery stools were directly treated with an equal volume of extraction buffer included in the kit. Muddy stools were first diluted double with normal saline solution and

100 µl of the diluent was treated with 100 µl of extraction buffer. The treated samples were centrifuged at 10,000 rpm for 5 min. A drop of the sensitized latex solution was placed at 3 places on the special sheet (black background) for the agglutination test. A drop of positive and negative control solution was added to the first and second latex, respectively, and a drop of stool supernatant was added to the third latex. Each sample was mixed well using a toothpick and then gently tilted several times. Agglutination was visually observed.

The detection rate of rotavirus from diarrheal stools was generally very low. Only 18 of 738 cases examined over the past 10 years were positive for rotavirus (2.4%). No positive case was found among the 175 cases examined in 1995, 1998, 2000 and 2003. The highest positive rate was observed in the 1997 samples, but this was still lower than 10% (Table 1). Rotavirus was mainly detected in the younger age group, a finding consistent with other reports. In the age group younger than 2 years, 15 of 250 cases examined (6.0%) were positive, but in age group older than 2 years, the positive rate was 0.6%, or 3 of 488, which was one-tenth that of the former group (Table 2). In spite of this fact, high infection rates such as 30 to 60% of pediatric diarrhea were reported in Vietnam and Thailand [3,7,8] countries neighboring Lao PDR. Although the reason for the low infection rate in Lao PDR is unclear, population density, which is markedly lower in Lao PDR than Vietnam and Thailand, may influence the infection rate. If person to person infection is the main infection route of rotavirus,

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Table 1. Detection rate by year

Year	No. examined	No. positive (%)
1994	84	1 (1.1)
1995	67	0
1996	113	2 (1.8)
1997	85	8 (9.4)
1998	24	0
1999	32	1 (3.1)
2000	21	0
2001	84	1 (1.1)
2002	165	5 (3.0)
2003	63	0
Total	738	18 (2.4)

Table 2. Distribution by age group

Age group (year)	No. examined	No. positive (%)
1>	143	9 (6.2)
1-2	107	6 (5.6)
2-5	59	0
5-15	42	1 (2.3)
15<	387	2 (0.5)
Total	738	18(2.4)

population density may play an important role in the spreading of the disease. According to a report in 1994 [4], rotavirus infection rate among children was 0.96% (16 of 1,668) in New Caledonia where the population density is lower than in Lao PDR. The detection method used in the present study may also have contributed to the low detection rate. A comparative study on the ability of commercially available ELISA kits and RPLA kits to detect rotavirus in stools revealed that the sensitivity was about 88% in ELISA and 70% in RPLA [12]. The studies in Thailand and Vietnam used ELISA while the present study in Lao PDR used RPLA to detect rotavirus. Most samples in the present study were collected in the dry season, and there seems to be some seasonal variation on the detection rate. Rotavirus is antigenically classified into 5 groups, A to E. These groups have independent RNA. Type A rotavirus is the most prevalent in humans throughout the world, but infections with type B and C have also been reported [9,10]. Therefore, non-type A rotavirus should also be considered when discussing the infections in Lao PDR.

The present paper briefly reported the distribution of rotavirus in Lao PDR summarizing the accumulated laboratory data. Since the epidemiological information from this country has been very limited, the data will contribute to discussions on the worldwide epidemiology of rotavirus infection.

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