

가 Acyclovir

.
가

= Abstract =

Post-Exposure Prophylaxis of Varicella in Family Contact by Oral Acyclovir

Sang Hee Kim, M.D., Jong Hyun Kim, M.D., Jin Hee Oh, M.D.
Jae Kyun Hur, M.D., Jin Han Kang, M.D. and Dae Kyun Koh, M.D.

*Department of Pediatrics, College of Medicine,
The Catholic University of Korea, Seoul, Korea*

Purpose : To determine whether varicella can be prevented by administration of oral acyclovir(ACV) during the incubation period of the disease.

Methods : Starting 9 days after exposure to the index case in their families, ACV(40 mg/kg/day in four divided doses) was given orally to 20 exposed children for 5 days. Their clinical features were compared with those of 20 control subjects. Antibody titers to VZV were measured in both group 1 week and 4 weeks after finishing the oral ACV administration.

Results : The mean age of family members with varicella(51.4 months) were significantly high compared to that of ACV prophylaxis group(28.5 months) and control group(31 months) ($P<0.05$). Among the 12 children with ACV prophylaxis who completed follow up blood sampling, nine children were diagnosed as VZV infection on the serologic test(75%). Among them six children showed positive VZV IgM on the first blood sample and two children showed seroconversion to positive IgM on the second test after ACV prophylaxis. One child who was negative on both IgM and IgG, showed positive IgG on the second test. The incidence of fever and severity of skin rashes were significantly low in children received oral ACV than in the control group. No or reduced number of maculopapular eruption were observed in the oral ACV group compared to multiple vesicles of the control group.

Conclusion : In the present study, we observed that oral ACV prophylaxis to the family contacts is effective in reducing severity of skin lesion. It is likely that oral ACV 9 days after contact prevents or reduces blood dissemination of VZV. Little is known about clinical effect and immunity to the virus in exposed children with no varicella symptom after treatment. We propose the checking up antibody to VZV some period after oral ACV, and con-

* 가
: , 가
Tel : 031)249-7320 Fax : 031)257-9111 E-mail : jh00mn@vincent.cuk.ac.kr

sidering vaccination to whom with no antibody. But further more studies are needed to practical application of oral ACV for the postexposure prophylaxis of varicella.

Key Words : Varicella, Varicella zoster virus, Prophylaxis, Acyclovir, Family contact

72

ACV 가

Varicella zoster virus(VZV)

1.

1996 3 1997 7 가

, Reye ,

가

10

21

14 16

¹⁾, 가

80 90%

²⁾,

³⁾.

가

72

zoster immune globulin

(ZIG)^{4) 6)}

^{6, 7)}

가

24 48

¹⁾

가

2.

1)

14

가

5

24

acyclovir

9

2

(ACV)

^{8, 9)},

가

9

ZIG

Acyclovir 40 mg/kg/ 4

5

72

VZV

ACV

^{10 16)}

6

(0), 1 10

1

가

(1), 11 50 (2), 51 100 (3), 101

,

ZIG

500 (4) 501 (5)

, 가

2) 0.05

가 2 , 1 4 ,

- 70 가 20 가

가 1 4 2

VZV IgM IgG 5 VZV IgG

Enzygnost[®] Anti-VZV/IgM Enzygnost[®] Anti-VZV/ 3

IgG(Behringwerke AG, Marburg, Germany) 12 20

2

가 ,

5.14(34 109), 28.5(7 70) 31(8 75)

3) 1:0.67, 1:1.14 1:1

VZV VZV IgM (P<0.05).

, VZV IgG가 VZV VZV

12 9 (75%) ACV

IgM

Table 1. Results of Post-exposure Prophylaxis of Varicella in Family Contacts by Oral Administration of Acyclovir

Case No	Study group								Index case			
	Age (mon)	Sex	Fever	Grade of skin rash [†]	1st sample		2nd sample		Age (yr)	Sex	Fever	Grade of skin rash
					VZV ⁺ IgM	VZV ⁺ IgG	VZV IgM	VZV IgG				
1	19	F	-	0	1.67	1.11	-	3.8	3	M	+	5
2	16	F	-	2	-	-	2.5	3.84	4	F	+	3
3	28	F	-	0	-	-	-	-	4	F	+	4
4	19	M	-	0	1.69	-	-	3.06	5	F	+	4
5	7	F	-	0	1.08	-	-	2.57	3	M	+	5
6	35	M	-	0	1.01	-	2.24	3.37	6	M	+	5
7	24	F	-	0	-	-	1.36	3.61	4	M	+	3
8	12	F	-	0	-	-	-	-	6	F	-	3
9	15	M	-	2	1.56	-	-	2.97	9	F	+	5
10	35	F	-	2	1.92	-	-	-	9	F	+	5
11	24	M	-	0	-	-	-	3.58	5	M	+	4
12	70	M	-	0	-	-	-	-	4	M	+	3
13	41	M	-	0	-	4.89	-	5.12	5	M	+	4
14	18	F	-	0	-	2.9	-	3.21	4	M	+	5
15	69	F	-	0	-	5.42	-	5.19	4	M	+	5

[†]Case No 13-15 who were already immuned were excluded when they were compared to control group

[†]VZV(Varicella zoster virus) IgM, IgG by Enzyme Immunoassay : cutoff point >1.0

[†]Grades of skin rash : 0, no skin lesion; 1, 1-10; 2, 11-50; 3, 51-100; 4, 101-500; 5, >501

Table 2. Severity of Varicella in the Study Subjects

Variables	Acyclovir group (n=12)	Control group (n=20)
Grade of skin rash		
0	9	3
1	0	0
2	3	0
3	0	3
4	0	10
5	0	4
Vesicle formation	1	17
Elevation of fever(>38)	0	15

*Grades of skin rash are defined in the footnote to Table 1

6 3
가
가 2
가 8
가 1
12
2
20
17 (85%)
20
3
2

VZV IgM
IgM, IgG
IgG가
(Table 1).
3 (25%)
15 (75%), 3
(P<0.01).
가
가 1

(Table 2).

11, 17) 1
ACV
Lin 14)
9 ACV
17 가
11 가
VZV
가 VZV
ACV
가
가
Kumagai
16) ACV VZV
3 5
Yoshikawa 15)
ACV 33 50 VZV
ACV
가
VZV
가
Lin
14) ACV VZV
가 30
가
12 가
가 3
가
VZV
7 ACV 가

ACV

Yoshikawa ¹⁵⁾
가

17

ACV
2

: Varicella zoster virus(VZV)

, 80 90%
72 zoster

immune globulin(ZIG)
가

24 48

가

가

72

ACV

가

VZV

가

Lin ¹⁴⁾
VZV

: 1996 3 1997 7 가

가

가 9

Acyclovir 40 mg/kg/ 4

5

가

ACV

6

VZV IgM , VZV IgG가
가

VZIG가

1

4

VZV

ACV

: 20 가

ACV

3

12

20

, 51.4 , 28.5

VZIG

31

ACV

VZV

(P<0.05).

VZV

12

가

9 (75%) ACV

VZV

ACV

IgM

6 3

가 2

가

VZV IgM

가 8

IgM, IgG

IgG가

가 1

12

3 (25%) 2
 20 15 (75%),
 3 17 (85%)
 가
 3 가
 1
 : ACV
 가 7
 ACV 가
 5
 1
 9 ACV
 가
 VZV
 ACV
 가
 VZV

- 1) American Academy of Pediatrics. Varicella-zoster infections. In : Peter G, ed. 1997 Red Book : Report of the committee on infectious diseases. 24th ed. Elk Grove Village, IL : American Academy of Pediatrics; 1997:573-85.
- 2) Simpson REH. Infectiousness of communicable diseases in the household(measles, chickenpox, and mumps). Lancet 1952;ii:549-54.
- 3) Ross AH. Modification of chicken pox in family contacts by administration of gamma globulin. N Engl J Med 1962;267:369-76.
- 4) Brunell PA, Ross A, Miller LH, Kuo B. Prevention of varicella by zoster immune globulin. N Engl J Med 1969;280:1191-4.
- 5) Gershon AA, Steinberg S, Brunell PA. Zoster immune globulin : a further assessment. N Engl J Med 1974;290:243-5.
- 6) Ogilvie MM. Antiviral prophylaxis and treatment of chickenpox. J Infect 1998;36:S31-38.
- 7) Asano Y, Nakayama H, Yazaki T, et al. Pro-

tection against varicella in family contacts by immediate inoculation with live varicella vaccine. Pediatrics 1977;59:3-7.

- 8) Balfour HH, Kelly JM, Suarez CS, et al. Acyclovir treatment of varicella in otherwise healthy children. J Pediatr 1990;116:633-99.
- 9) Dunkle LM, Arvin AM, Whitley RJ, et al. A controlled trial of acyclovir for chickenpox in normal children. N Engl J Med 1991;325:1539-44.
- 10) Suga S, Yoshikawa T, Ozaki T, Asano Y. Effect of oral acyclovir against primary and secondary viraemia in incubation period of varicella. Arch Dis Child 1993;69:639-43.
- 11) Asano Y, Yoshikawa T, Suga S, Kobayashi I, Nakashima T, Yazaki T, Ozaki T, Yamada A, Imanishi J. Postexposure prophylaxis of varicella in family contact by oral acyclovir. Pediatrics 1993;92:219-22.
- 12) White CB, Hawley WZ, Harford DJ. The pediatric resident susceptible to varicella : providing immunity through postexposure prophylaxis with oral acyclovir. Pediatr Infect Dis J 1994;13:743-5.
- 13) Huang Y, Lin T, Chiu C. Acyclovir prophylaxis of varicella after household exposure. Pediatr Infect Dis J 1995;14:152-4.
- 14) Lin TY, Huang YC, Ning HC, Hsueh C. Oral acyclovir prophylaxis of varicella after intimate contact. Pediatr Infect Dis J 1997;16:1162-5.
- 15) Yoshikawa T, Suga S, Kozawa T, Kawaguchi S, Asano Y. Persistence of protective immunity after postexposure prophylaxis of varicella with oral aciclovir in the family setting. Arch Dis Child 1998;78:61-3.
- 16) Kumagai T, Kamada M, Igarashi C, Yuri K, Furukawa H, Chiba S, Kojima H, Saito A, Okui T, Yano S. Varicella-zoster virus-specific cellular immunity in subjects given acyclovir after household chickenpox exposure. J Infect Dis 1999;180:834-7.
- 17) Asano Y, Itakura N, Kajita Y, et al. Severity of viremia and clinical findings in children with varicella. J Infect Dis 1990;161:1095-8.