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= Abstract =

Clinical Significance of Enterovirus in Febrile Illness of Young Children

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Purpose : Enterovirus is a common cause of aseptic meningitis and nonspecific febrile illness in young children. During the summer and fall months, enterovirus-infected young children are frequently admitted and evaluated to rule out bacterial sepsis and/or meningitis. The purpose of this study was to evaluate the relationship between nonpolio enterovirus infection and febrile illness in infants under 3 months of age during the summer, fall months by using a stool culture to identify the presence of enterovirus.

Methods : Patients included febrile infants under 3 months of age admitted to Masan Fatima Hospital for sepsis evaluation from May 1999 to September 1999. Cultures were performed from stool and Cerebrospinal fluid samples and then were tested for enterovirus infection. Viral isolation and serotype identification were performed by cell culture and immunofluorescent testing. Enteroviruses not typed by immunofluorescent testing were confirmed by reverse transcription-polymerase chain reaction.

Results : A total of 44 febrile infants were enrolled; of those, 20(45%) were positive for enterovirus. Two enterovirus culture-positive infants had concomitant urinary tract infection and one had Kawasaki disease. All infants infected with an enterovirus recovered without complications. Serotype of 20 enteroviruses were isolated from stool, 3 of echovirus type 9, 1 of echovirus type 11, 1 Coxsachievirus type B4, 15 of untyped enteroviruses. One untyped enterovirus was isolated in the CSF.

Conclusion : Nonpolio enterovirus infections are associated with nonspecific febrile illnesses in infants under 3 months of age.

Key Words : Enterovirus, Febrile illness, Young children

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human embryonal rhabdomyosarcoma(RD), African green monkey kidney(BS-C-1), human lung diploid (MRC-5), human cervix epidermoid carcinoma(HeLa) reverse transcription-polymerase chain reaction(RT-PCR) 100 μL RNasin 40 U TRI REAGENT® BD(Molecular Research Center, INC, Cicinnati, OH) RNA

Primer Probe 5' noncoding region
100% (Gene-med Biotechnology, INC., San Francisco, CA)
RNA 4 μ L
2 μ L antisense primer (10 pmol/ μ L), 8 μ L
dNTP (10 mM/ μ L), avian reverse transcriptase
42 90
sense primer (10 pmol/ μ L, 5'-CCTCCGG-CCCCTGAATGCGGCTAAT-3'), antisense primer (10 pmol/ μ L, 5'-ATTGTCACCATAAGCAGCCA-3')
8 μ L, 10 U Taq polymerase PCR
denaturation (90) 1 , annealing (50) 1 , extension (72) 1 37
PCR
154 bp 가 ,
3
44
가 20 ,
1 15 , 5
(Table 1).
가
6 9 6 가
가 (Fig. 1).
4 13 375/mm³

Table 1. Age & Sex Distribution of Patients

Age (Month)	Male/Virus (+) [*]	Female/Virus (-) [†]	Total/Virus (+) [*]
> 1	8/5	3/2	11/7
1 2	13/7	8/3	21/10
2 3	7/2	5/1	12/3
Total	28/14	16/6	44/20

* culture positive, † culture negative

2 6 3.4 2 ,
가 3 , 2 , 1
(Table 2).

echo- 1 Kawasaki
virus type 9 3 , echovirus type 11 1 , Cox-
sachievirus type B4가 1 , 15
1
가 가
(Table 3). RT-PCR

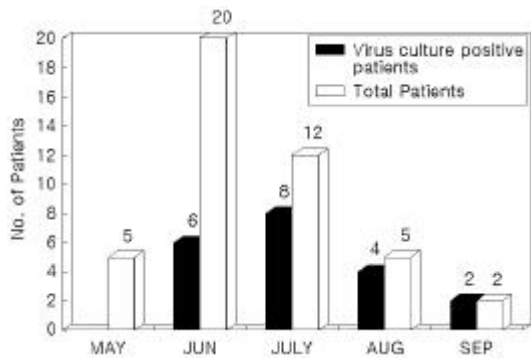


Fig. 1. Monthly distribution of patients.

Table 2. Clinical Manifestations of Virus Culture Positive Patients

Symptoms & signs	Patients(n=20)
Fever duration	2 6 days (mean; 3.4 days)
Diarrhea	2
Vomiting	3
Poor feeding	2
Rash	1

n : number

Table 3. Isolated Viruses of Patients

Samples	Virus(number of patients)
Stool	Echovirus type 9; 3
	Echovirus type 11; 1
	Coxsachievirus type B4; 1
	Untyped enterovirus; 15
Cerebrospinal fluid	Untyped enterovirus; 1

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2
1 Kawasaki

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1993, 1996 echovirus type 9
7 10) , 1997

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가 echovirus type 30, 6, 4, coxsachie-
virus type B5, A24 가

11) .

5 11) .

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Dagan 3

6 : 3 97

10% 16 19) .

90% , , , , ,

6.7 11%

7 10 15, 20) . 1993

103 65%, Respiratory syncytial virus(

RSV) 1 4 81 40%, 5,090 1% 48

A 1 2 49 , , Guillian-Barre

22% 가 . 3 , 6

가 7) .

RSV 12) .

가 가

11) 가 가

3 21) .

가

가 , , , , ,

가 13) . 1996 , 1997 48 .

3

20.1%, 13.8% 3 4

10, 11) 1, 2, 4, 12, 22, 23) .

3 가

24) .

3

96 10) 97

23 9.7% 11) .

가 2, 25) .

13% 21% 가

14, 15) .

RT-PCR

가 , , , , ,

가 , 가

가 , 가

2 24, 26 28) .

- echovirus type 9 3 , echovirus type 11 1 ,
Coxsackievirus type B4가 1 , 15
1
가 가
RT-PCR
- 2
1 Kawasaki
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9
1994;14:185-92.
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RNA
1996;3:163-7.
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9
1994;14:185-92.
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1997;4:97-105.
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