

Respiratory Syncytial Virus

Occurrence and Clinical Characteristics of Patients Infected with Subgroups of Respiratory Syncytial Virus

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Background : Respiratory syncytial virus (RSV) is the single most common cause of lower respiratory tract infections in infants and young children. RSV can be classified into two major groups, A and B with subgroups based on their reactivity with monoclonal antibodies. There were no reports on the subgroups of RSV isolates in Korea. The purpose of this study is to identify RSV isolates from patients with lower respiratory tract infections to subgroup level and to examine clinical characteristics of subgroup infections.

Methods : RSV infection was diagnosed by viral culture of nasopharyngeal aspirates in patients with lower respiratory infection. Forty two RSV isolates over four successive outbreaks (94/95, November 1994-January 1995; 95/96, Nov. 95-Jan. 96; 96/97, Nov. 96-Jan. 97; 97/98, Nov. 97-Jan. 98) were subgrouped by indirect immunofluorescence with subgroup-specific monoclonal antibodies. Clinical characteristics of subgroup infections were evaluated by review of medical records.

Results : Twenty eight (67%) isolates were identified as group A and 14 (37%) strains as group B. Group A isolates of the 94/95, 95/96, and 96/97 seasons were subgroup A/4, and those of 97/98 season were subgroup A/2. Group B isolates were all identified as subgroup B/2. There was no statistically significant difference in clinical characteristics according to the subgroup infections.

Conclusions : This study show that RSV subgroup A/4, A/2 and B/2 isolated over recent four successive epidemic seasons in Seoul. There was no significant difference in clinical characteristics or severity according to the subgroup infections.

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Key words : Respiratory syncytial virus (RSV), Lower respiratory tract infections, Groups, Subgroups

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, respiratory syncytial virus (RSV), adenovirus, influenza virus, parainfluenza virus, *Haemophilus influenzae*, *Mycoplasma pneumoniae*, *Streptococcus pneumoniae*, *Mycobacterium tuberculosis* [2].

RSV 가
Paramyxoviridae Pneumovirus
[3], 가 100-350 nm RNA
[4], ,

(syncytial) 가 RSV
[5]. RSV 2 가
2 , 가

RSV , RSV
, [6,7].
RSV , RSV
, [8].

, 가 [9].
RSV G F
A B A B [10].
6 , B 3 , A

[11]. RSV 가
,
[12]. RSV RSV
[13]. RSV

RSV RSV A B
[11,14-17]. 가 RSV
RSV A B 가 ,
A B . RSV

A B 가 [14,15]. RSV
A B 가
[18-20].

RSV [21-23],
A B [24], A B

4 RSV A B

1.

RSV
가 , 1994 11 1995 1 (94/
95), 1995 11 1996 1 (95/96), 1996
11 1997 1 (96/97) RSV
, -70 RSV
1997 11 1998 1 (97/98)

2.

1)
50 μg/mL
gentamicin, 2.5 μg/mL amphotericin B, 340 U/mL penicillin

G 가 veal infusion , 가
-4

2) HEp-2

RSV
HEp-2 24 0.1-0.2 mL
(ATCC, CCL23) 가 24 well
, 10%

Eagle's minimum essential medium (EMEM) ,
2% EMEM
10

3) RSV

RSV 가 well
,
10 , RSV mouse
(Chemicon International Inc., Temecula, CA, USA)

가 30 , 3
, FITC-conjugated anti-mouse IgG(Cappel, West Chester,
PA, USA) 30 , 3

4) RSV

RSV
(94/95 , 16 ; 95/96 ,
12 ; 96/97 , 3) 97/98
(11) 42 RSV
Anderson [10] RSV
(Chemicon International Inc., Temecula,
CA, USA) , A B F
92-11c 102-10b ,
G 130-5f, 130-6d, 130-9g, 143-5a
. RSV Anderson

Table 1. Antigenic characteristics of respiratory syncytial virus subgroups*

Group	Subgroup	Monoclonal antibody					
		92-11c	102-10b	130-6d	130-5f	130-9g	143-5a
A	A/1			+	-	-	+
	A/2			+	+	-	-
	A/3			+	-	-	-
	A/4	+	-	+	+	-	+
	A/5			+	+	+	-
	A/6			-	-	-	-
B	B/1			-	+	-	+
	B/2	-	+	-	+	-	-
	B/3			-	-	-	-

* Modified from Anderson et al., 1991

Table 2. Distribution of respiratory syncytial virus subgroups during epidemic seasons

Season	Typed strains	No. (%) of patients with subgroup		
		A/4	A/2	B/2
94/95	16	9 (56)	0 (0)	7 (44)
95/96	12	9 (75)	0 (0)	3 (25)
96/97	3	2 (67)	0 (0)	1 (33)
97/98	11	0 (0)	8 (73)	3 (27)
Total	42	20 (48)	8 (19)	14 (33)

[11] (Table 1). RSV가 RSV 94/95, 95/96, 96/97
 RSV HEp-2 A/4 B/2 , A/4 (65%) B/2
 , 1-2 14 (35%) . 97/98 RSV A
 가 , A/2 , B 97/98 A/2 B/2
 . . 97/98 A/2 (73%) B/2
 RSV (27%) A 67%, B
 33% (Table 2).

5)

2. RSV

RSV가

기

1

81%

, , , , . 81%

($P=0.13$),

($P=0.43$)

6)

$\Delta/2 = 6.5$ and $B/2$

Chi-square
, P 0.05

Kruskal-Wallis

가

REFERENCES AND NOTES

al v-

1 PSV

[21,22].

4 RSV (11 -1) 42
 (94/95 , 16 ; 95/96 , 12 ; 96/97 , 3 ; 97/98 , 11)

[6]. 2-5

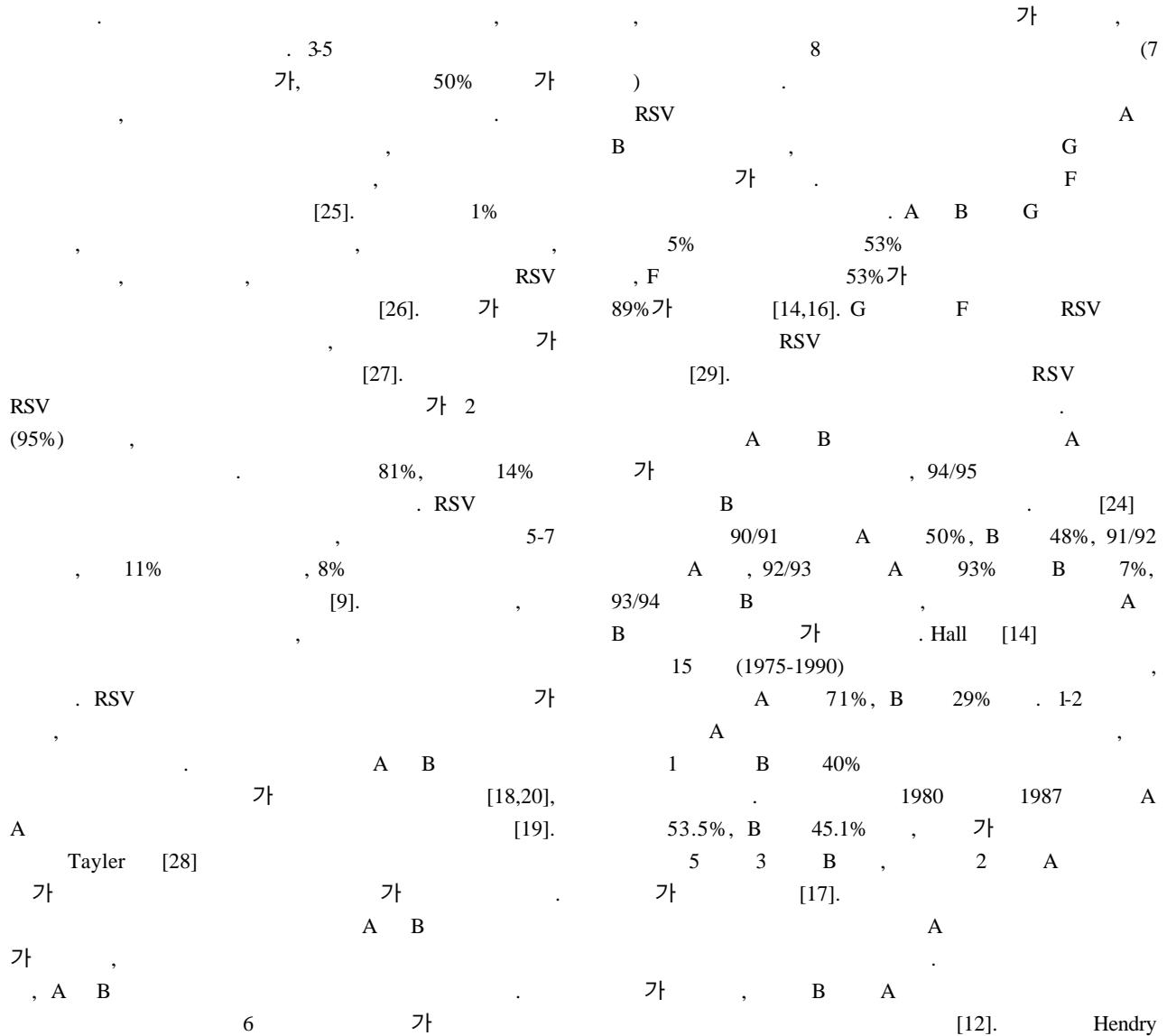
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Table 3. Clinical characteristics of patients infected with respiratory syncytial virus according to the subgroups

Characteristics	No. (%) of patients		
	A/4 (n = 20)	A/2 (n = 8)	B/2 (n = 14)
Gender			
Male	14 (70)	7 (88)	8 (57)
Female	6 (30)	1 (12)	6 (43)
Age (month)			
0 - 5	7 (35)	3 (38)	7 (50)
6 - 11	7 (35)	4 (50)	4 (29)
12 - 23	4 (20)	1 (12)	3 (21)
24 - 35	2 (10)	0 (0)	0 (0)
Type of respiratory disease			
Bronchiolitis	16 (80)	7 (88)	11 (79)
Pneumonia	2 (10)	1 (12)	3 (21)
Croup	2 (10)	0 (0)	0 (0)
Patient with underlying disease*	4 (20)	0 (0)	2 (14)

* Underlying diseases are all asthma.



- [30] , A 67% G : 28 (67%)† A 14 (37%)† B
 , B 58% . A 94/95, 95/96, 96/97 A/4 ,
 . A/2 B
 B , A B/2
 B 가 , B [30]. 4
 A 9 A/4 A/2 , B B/2
 B 5.5 가
 , B
 가 [28]. Hall [14] ,
 가
 A B 1. , , , , ,
 14 RSV A B (1966-1985).
 가
 A B
 , ,
 A B 가 ,
 [11]. influenza virus
 가
 가 [31]. 4
 A B , A/4, A/2
 B/2 ,
 , ,
 , ,
 , ,
 RSV 가
 , ,
 : Respiratory syncytial virus (RSV)
 가 RSV
 A B
 , ,
 RSV
 , ,
 : RSV 4
 (94/95, 94. 11.-95. 1.; 95/96, 95. 11.-96. 1.; 96/97,
 96. 11.-97. 1.; 97/98, 97. 11.-98. 1.) 42
 RSV
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