

MMR

= Abstract =

Adverse Events Associated with MMR Vaccination in Korea
- Prospective Study Using Telephone Surveillance Method -

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Purpose : Adverse events(AE) associated with vaccination have not been systematically monitored in Korea. But since 1994, several deaths after inactivated mouse brain derived Japanese encephalitis vaccine injection arouse the safety problem of immunization in the public, and a evaluation of vaccination program including the effectiveness and safety problem had been started. We have been using MMR vaccine containing Japanese mumps vaccine strains, which are known to be associated with the high rate of adverse events including aseptic meningitis, for the last decade.

Methods : We conducted a prospective study of vaccine adverse events associated with MMR vaccine through a tracking system using telephone calls. We followed up 7,594 cases of MMR vaccinees.

Results : Reported adverse events included fever, convulsion, parotitis, and aseptic meningitis. Nine cases of parotitis and seven cases of aseptic meningitis were recognized during follow up period. The incidence of both parotitis and aseptic meningitis was $85.1/10^5$, for Urabe mumps strain. For Hoshino strain, the incidence of parotitis and aseptic meningitis was $158.0/10^5$ and $94.8/10^5$, respectively.

Conclusions : The incidence of adverse events was to be a higher than that of natural infection in Korea and was comparable to the results of studies done in other countries.

Key Words : Adverse events, MMR vaccination, Parotitis, Aseptic meningitis, Prospective study

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1. MMR

1999 6 27 9 30

25 MMR Table 1

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Table 1. MMR Vaccine Used in Public Health Center

	Location	Mumps strain and Distributor
Seoul	1. Seocho-Gu	Urabe(Dongshin Pharm.)
	2. Kwangjin-Gu	Hoshino(Green Cross Co.)
	3. Kangdong-Gu	Hoshino(Green Cross Co.)
	4. Songpa-Gu	Hoshino(Green Cross Co.)
	5. Songdong-Gu	Hoshino(Green Cross Co.)
Kyonggi Province	6. Ansung	Urabe(Korea Vaccine Co.)
	7. Kweunsun-Gu, Suwon	Urabe(Korea Vaccine Co.)
	8. Dukyang-Gu, Koyang	Urabe(Dongshin Pharm.)
	9. Kwachon	Urabe(Dongshin Pharm.)
	10. Hanam	Urabe(Boryung Pharm.)
	11. Kuri	Urabe(Boryung Pharm.)
	12. Gwangju	Urabe(Boryung Pharm.)
	13. Manan-Gu, Anjang	Urabe(Boryung Pharm.)
	14. Dongan-Gu, Anjang	Urabe(Boryung Pharm.)
	15. Kwanmyong	Urabe(Boryung Pharm.)
	16. Shihung	Urabe(Boryung Pharm.)
	17. Yangju	Hoshino(Green Cross Co.)
	18. Hwasung	Hoshino(Green Cross Co.)
	19. Ichon	Hoshino(Green Cross Co.)
	20. Pyongtaek	Hoshino(Green Cross Co.)
	21. Sujung-Gu, Songnam	Hoshino(Green Cross Co.)
	22. Gunpo	Hoshino(Green Cross Co.)
	23. Kimpo	Hoshino(Green Cross Co.)
	24. Jungwon-Gu, Songnam	Hoshino(Green Cross Co.)
	25. Bundang-Gu, Songnam	Rubini(CheilJedang)

2. MMR				%		92.1%		(Table 2).	
1999	7	12	9	30	3	25	4	.	
		7,594		MMR			1, 2		
				Urabe	12		가	170	7,289
(	,	,	,	,	,	,	2.3%		. 1
,	,	,	,	,	,	,	167	2.4%(167/6,938)	
	,	,	)	3,742			2		75 1.0%(75/
	Hoshino	12		(,	,			
,	,	,	,	,	,	,			
	,	,	,)				
3,547			. 1	(	)		7,049)		.
	305	Rubini	MMR						1
(Table 2).				Urabe	2.4%(85/3,494),	Hoshino	2.5%(80/3,191),		
	3			Rubini	0.7%(2/305)				
									(<i>P</i> >0.1).
	3		25				Urabe	0.8%(30/3,553),	Hoshino
	7,594						1.4%	(45/3,191),	Rubini
	MMR				가	가			
	가		2	(1	)	6,938		(<i>P</i> <0.02)(Table 3).	
,	4	(2	)	7,049	가	1	1)		
				91.4%,	2				92.8

Table 2. Number of Vaccinees, Response Rate of Telephone Survey and Vaccine Strain Used in Public Health Center

Mumps Strain	No. of Public Health Center	No. of Vaccinee	No. of Responder (1st Survey)	No. of Responder (2nd Survey)	Response Rate(%)
Urabe	12	3,742	3,414	3,553	93.1
Hoshino	12	3,547	3,221	3,191	90.4
Rubini	1	305	303	305	99.7
Total		7,594	6,938	7,049	92.1

Table 3. Adverse Events of MMR Vaccine

	Total Reported Cases				Fever			
	1st Survey		2nd Survey		1st Survey		2nd Survey	
	Yes(%)	Total	Yes(%)	Total	Yes(%)	Total	Yes(%)	Total
Urabe	85(2.4)	3,494	30(0.8)	3,553	416(11.9)	3,494	140(3.9)	3,553
Hoshino	80(2.6)	3,139	45(1.4)	3,191	356(11.3)	3,139	147(4.6)	3,191
Rubini	2(0.7)	305	0(0.0)	305	18(5.9)	305	1(0.3)	305
Total	167(2.4)	6,938	75(1.1)	7,049	790(11.4)	6,938	288(4.1)	7,048

1 Urabe 11.9%(416/3,494), Hoshino 11.3%(356/3,139), Rubini 5.9%(18/305) 4 MMR 12 17 13

4 4 6 MMR Urabe 가 3 0.08%(3/3,553) Ho 1- shino 가 5 0.16%(5/3,191) (Table 5). MMR 133.4/100,000 1997 10/100,000

($P > 0.05$). 2 Urabe 3.9%(140/3,553), Hoshino 4.6%(147/3,191), Rubini 0.3%(1/305) ($P < 0.02$)

(Table 3). 2) , Urabe , 가 21 0.3%(21/7,289) (3) 4 , , 가 0.07%(5), 0.12%(8), 가 0.1%(7) (1) MMR 4 가 5 0.07% 3 27 Urabe 가 3 0.08%(3/3,553) Hoshino 가 3 12 Rubini 가 MMR 가 8 27 6 (0.09%) 14.8 13 15 12 27 13.8 5 20 6 4 MMR (Table 4). 13 31 18.5 2 (2) MMR 4 8 (0.12%) 6 31 가 PCR 7 44 20.8

Table 4. 5 Reported Cases Who had Convulsion after MMR Vaccination

Name	Age(mon.)	Interval between Vaccination and Convulsion(days)	Parotid Swelling	Meningeal Irritation Sign	Fever	Vomiting	Strain	Result
PSH	14	10	No	No	No	Yes	Hoshino	Recoverd
EJS	13	27	No	No	Yes	Yes	Hoshino	Recoverd
JWK	16	8	No	No	Yes	Yes	Urabe	Recoverd
KSM	14	17	No	No	Yes	Yes	Urabe	Recoverd
KJH	14	12	No	No	Yes	No	Urabe	Recoverd

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(Table 6). MMR

Urabe , 가 ,
 85.1/100,000, Hoshino 94.8/100,000 1998 , , , ,
 1 3
 39.3/100,000 . (MMR)
 3가
 100,000 가
 MMR . 1980 MMR
 가
 가 . 5/100,000 5
 10 14 ,

Table 5. 9 Reported Cases Who had Diagnosed as Parotitis After MMR Vaccination

Name	Age(mon.)	Interval between Vaccination and Parotitis(days)	Convulsion	Meningeal Irritation Sign	Fever	Rash	Strain	Result
EUB	14	15	No	No	Yes	No	Hoshino	Recoverd
KSB*	51	19	No	No	Yes	No	Hoshino	Recoverd
OHJ	17	7	No	No	No	No	Hoshino	Recoverd
JMH*	13	18	No	No	No	No	Hoshino	Recoverd
KKH	12	18	No	No	No	No	Hoshino	Recoverd
PMJ	14	26	No	No	No	No	Urabe	Recoverd
KDH†	54	21	No	No	No	No	Urabe	Recoverd
KHM*	65	44	No	No	No	No	Urabe	Recoverd
KJH†	47	19	No	No	Yes	No	Urabe	Recoverd

*A case of booster

† A case of transfer. It was confirmed by PCR and virus culture

Table 6. 7 Reported Cases Who had Diagnosed Aseptic Meningitis with Clinical Definition after MMR Vaccination

Name	Age (mon.)	Interval between Vaccination and Meningitis(days)	Convulsion	Patotid Swelling	Meningeal Irritation Sign	Fever	Rash	Neck Stiffness	Strain	Result
SJH*	24	3	No	No	Yes	Yes	Yes	No	Hoshino	Recoverd
CKY	74	15	No	No	Yes	Yes	Yes	Yes	Hoshino	Recoverd
JMY†	31	18	No	No	Yes	Yes	No	No	Hoshino	Recoverd
JYE	14	25	No	No	Yes	Yes	Yes	No	Hoshino	Recoverd
JSB	12	12	No	No	Yes	Yes	Yes	No	Urabe	Recoverd
SJH	16	27	No	No	Yes	Yes	No	No	Urabe	Recoverd
KTJ	59	23	No	No	Yes	Yes	Yes	Yes	Urabe	Recoverd

*A case of exclusion from analysis

† It was confirmed by PCR and virus culture.

1990 1994 1,874 ,
 1995 430 , 1996 254 , 1997 238 가 .
 1998 4,461 4 6 가
 가 1999 2,514 .

Jeryl Lynn
 10/100,000 가 0.08/1,000,000, 0.26 0.06/1,000,000
⁶⁾ . 1998 , 1999 ^{15, 16)} . 1/1,000,000
 가 , ¹⁷⁾ . Leningrad-3 1/1,000
^{7 9)} . ¹⁸⁾ . Rubini

MMR 가
 1983 MMR . Urabe
 1995 (SmithKlein Beecham) 1/62,000
 Hoshino Urabe AM-9 ¹⁹⁾ , (Pasteur-Merieux Connaught)
 . 1/28,400 ^{5, 20)} .
 Jeryl Lynn , Rubini , Lenniggrad-3 Urabe AM-9 1/18,686 1/933
 . MMR , Hoshono 1/1,883
^{1, 21)}

^{2, 3)} . , ,
 , 1995 가 4
 Urabe AM-9 MMR Urabe
 1 1
 , MMR 3 Urabe
 가 ¹⁾ . Brown ¹⁴⁾
 가 Urabe
²²⁾ Urabe AM9
 .
 가 103
 3 MMR

가 가 . 1995
 Jeryl Lynn ,
 Rubini , 가 .
 가 1993 MMR
 MMR 28
 .
 2 3 Urabe , 1/2,600
^{23 25)} . Jeryl
 , pleo- Lynn 가 15%
¹⁰⁾ . Urabe
 cytosis Urabe Jeryl
 , ^{11 14)} Lynn .

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가 가

2 Urabe Hoshino 가

Rubini strain

, DTaP

5.4%, 14.7%

26)

($P>0.05$).

1 가 가

0.07%,

8/6,938 0.12%

7/6,938 0.1%

가 MMR

가

1/1,000 MMR

80%

가

mumps Urabe Hoshino

:

MMR

Jeryl Lynn

Rubini

가 가

. Noke Anderson²⁷⁾ Urabe

Jeryl Lynn risk-benefit ratio

가 Urabe , 2 , 4

PCR

가 가

28)

가

가

2 Urabe 3.9

%, Hoshino 4.6%, Rubini 0.3%

Jeryl

5 0.07%

Rubini 가 가

8 0.12%

1997

가 가

7 1 가 가

가

가 MMR

1998

MMR

:

MMR

strain , , ,

- MMR
- 가
- MMR
- 가 가
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