

BCG

= Abstract =

Factors Affecting Clinical Course of BCG Lymphadenitis

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Purpose : Lymphadenitis is the most common complication of BCG vaccination and has various clinical course and prognosis, but there are no accurate guidelines for management of BCG lymphadenitis. We performed this study to reveal the clinical course of BCG lymphadenitis and provide guidelines for its management.

Methods : From January, 1997, to May, 2000, 73 patients in the 3 24 months were enrolled. We investigated retrospectively the size, site, and number of lymphadenitis, tuberculin skin test induration, used BCG strains, vaccination age, injection site, treatment and clinical course. The effects of various variables on clinical course were evaluated.

Results :

- 1) There were no statistically significant difference between lymphadenitis size and tuberculin test induration diameter, spontaneous resolution rate, and suppuration rate.
- 2) Later vaccination(1 mo) and supraclavicular lymphadenitis increased suppuration rate. Using domestic BCG product increased surgical treatment rate.
- 3) According to treatment(observation vs antituberculous medication), medication did not affect the prevention of suppuration and ironically increased the rate of suppuration and surgical treatment.
- 4) Suppurative lymphadenitis required more surgical treatment than non-suppurative one.

Conclusions : Clinical course of BCG lymphadenitis is affected by vaccination age, used BCG strains, site of lymphadenitis, antituberculous medication and suppuration, but not affected by size and number of lymphadenitis. For management of BCG lymphadenitis, systemic antituberculous medication is not recommended and regular follow up with observation should be the mainstay. But for suppuration, active surgical en bloc resection should be the treatment of choice.

Key Words : BCG, Lymphadenitis, Management

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가 1995 0.8% 1997 1 2000 5 BCG 3 24
 1 BCG 가 73 . 73 BCG
 가
 . Bacille Calmette – Guérin(BCG)
 BCG
 BCG 가
 0.1 25%^{1 6)} (A
 : 2 cm , B :2 3 cm, C :3 cm
)
 가
 BCG
 BCG
 isonia-
 zid(INH) INH rifampin(RFP)
 BCG
 BCG
 BCG
 (Mantoux Test) purified protein
 derivatives(PPD) 5 TU 0.1 mL
 26G

0.6 1 cm PPD 48 72 , BCG 73 French strain 1173 P2가 66 (90.4%) , French strain 1173 P2가 3 (4.1%) , Tokyo 172 BCG 4 (5.5%) 가 66 , 7 .

10 mm (or <0.5 cm) .

3 . BCG (Table 1)

Student t test

Chi-square test $P<0.05$

73 (5 TU) 5 mm 가 5 (6.8 %), 6 10 mm 2 (2.8%), 10 14 mm 14 (19.2%), 15 mm 52 (71.2%) 66 (90.4 %) 가 .

1 . A 18±4 mm, B 17±7 mm, C 19±9 mm

3 24 가 42 , 7.09 , 73 가 31 .

A 1.3±0.8 , B 1.4±0.8 , C 1.3±0.6 , BCG 4 .

A BCG 73 21 (28.8%)가 4.5±0.2 , B 2.9±0.1 , C 4.0±0.3 , A 6 , B 11 , C 4 ($P>0.05$)(Table 1).

Table 1. Characteristics of Three Groups according to the Size of BCG Lymphadenitis

	Group A (N=18)	Group B (N=33)	Group C (N=22)
Lymph node diameter(cm)			
M ± SD [†]	1.4 ± 0.3	2.3 ± 0.3	3.3 ± 0.5
Range	1.0 1.8	2.0 2.5	3.0 5.0
Age at vaccination(mo)			
M ± SD [†]	1.3 ± 0.8	1.4 ± 0.8	1.3 ± 0.6
Range	0.5 3.5	0.7 4.0	0.5 3.0
Interval(mo) [‡]			
M ± SD [†]	4.5 ± 0.2	2.9 ± 0.1	4.0 ± 0.3
Range	2.0 9.0	0.3 5.0	1.0 14.0
Tuberculin reaction induration size(mm)			
M ± SD [†]	18 ± 4	17 ± 7	19 ± 9
Range	13 25	0 34	0 30

[†]Groups according to the size of BCG lymphadenitis Group A, less than 2 cm of diameter; Group B, 2 3 cm of diameter; Group C, greater than 3 cm of diameter, [†]M ± SD : mean ± standard deviation, [‡]Interval(mo) : intervals months between BCG vaccination and detection of lymphadenitis

($P=0.83$). 73 37 (50.7%)가 , 4 , 26
 A (18) 11 , . 29 21 (72.4%)가
 B (33) 15 , C (22) 11 , 8 (27.6%) 가
 가 ($P=0.652$). . 14 5 (35.7%)
 , 1 (7.2%) , 8 (57.1%)
 가 .) 가 .

5. BCG

(Table 2)

BCG 가 73 BCG 27.6%(8) , 64.3
 가 1 가 43 , 1 % (9) , 가 27.6%(8
 가 30 . 1) , 71.4%(10) 가
 22 ± 2.5 mm, 1 25 ±
 3.3 mm , 1 39.5 . 가 ($P<0.05$).
 % (17) , 1 66.6%(20) 1
 가 7 .
 ($P<0.05$). (Table 4)

6. (Table 3)

73 29 36 23 (63.9%)(
 , 14 4) , 13 (36.1%)
 37 3 (8.1%)(1)
 , 5 (13.5%)(
 1) , 29 (78.4%)
 가
 가

Table 2. Difference of Clinical Course according to the Age at Vaccination

	< 1 mo(%)	1 mo(%)
No. of patient	43(58.9)	30(41.1)
Size of lymphadenitis(mm)		
M ± SD*	22 ± 2.5	25 ± 3.3
No. of suppuration	17(39.5)	20(66.6)

*M ± SD : mean ± standard deviation

1173 P2 66 36 (54.5%)가 French strain

Table 3. Management of BCG Lymphadenitis

	Group A(N=18)	Group B(N=33)	Group C(N=22)	Total(%)
Observation	10	15	4	29(39.7)
Spontaneous regression	6	11	4	21(72.4)
Later resection	4	4	0	8(27.6)
Chemotherapy	5	7	2	14(19.2)
Only	1	4	0	5(35.7)
+ Aspiration	0	0	1	1(7.2)
+ Resection	4	3	1	8(57.1)
Aspiration	0	1	3	4(5.5)
Resection	3	10	13	26(35.6)

Table 4. Difference of Outcome Between Non-suppurative and Suppurative BCG Lymphadenitis

	Non-suppurative No.(%)	Suppurative No.(%)	Total(%)
Regression without surgical Tx.	23(63.9)	3(8.1)	26(35.6)
Aspiration	0(0.0)	5(13.5)	5(6.9)
Resection	13(36.1)	29(78.4)	42(57.5)
Total(%)	36(100.0)	37(100.0)	73(100.0)

가 , 66 19 (28.8%)(4)
 가 , 5 (1) (7.6%), 42 (63.6%) 가
 . BCG 4 1
 French strain 1173 P2 3
 French strain 1173 P2
 (P=0.1), (P=0.005).
 9. (Table 5)
 73 62 (85%) , 7 (9.6%)
 , 4 (5.4%)
 62 28 (45.2%)가, 7 6
 (85.7%), 4
 3 (75%)가
 62 24 (38.7%)(
 3) , 3 (4.8%) , 35
 (56.5%)(3)
 . 7 1 ()
 , 2 (1)
), 4 (57.1%)(1)
 가
 4 1 () ,
 3 (75%)(2) 가
 . 가
 (P=0.04),
 가 .

Table 5. Difference in Clinical Course according to Number and Site of BCG Lymphadenitis

Number & site	No.(%)	No. of suppuration (%)
Single	63(86.0)	32(50.8)
Axillary	57(90.5)	27(47.4)
Supraclavicular	6(9.5)	5(83.3)
Multiple	10(14.0)	5(50.0)
Axillary	5(50.0)	1(20.0)
Supraclavicular	1(10.0)	1(100.0)
Axillary + Supraclavicular	4(40.0)	3(75.0)
Total	73(100.0)	37(50.7)

10. (Table 5)

73 가 63 32
 (50.8%), 10
 5 (50%)가
 가 63 21 (33.3%)(
 3)가 , 5 (8%)(
) , 37 (58.7%)(
 4)가 가
 가 10 5 (50%)(
 2) , 5 (50%)(
 4)
 가 (P>0.05).

186 : 8 2 2001

가 가 ¹⁴⁾,

, 1902 Behring 1 BCG 0.05 0.1
1908 Calmette Guerin mL

4, 5, 7 ¹⁰⁾ 13 231 BCG 2 3

¹⁵⁾

, , 가 가 3

1921 Weill-Halle , BCG

BCG

Anderson ¹¹⁾ 1935 1995 ,
Puerto Rico, BCG

BCG 가 0 80% 가 ,
BCG BCG

(BCGiosis),

가 가 BCG

^{1, 2, 4, 5, 15 17)} BCG

BCG 51%, 50% 가
0.1 6%

55% ^{5, 10, 12)} Caglayan ⁶⁾ 25%

BCG 0.8/ 10 ,
1975 BCG 1%

3.8/ 10 가 BCG가 ^{1 6, 15, 18, 19)} BCG

¹²⁾

¹³⁾

BCG

BCG 0.02 5%

, BCG , ,

4 Colditz ,

¹²⁾ BCG , 1

50%, ^{1, 2, 4, 5, 9, 10, 15 22)}

50 80% 가 BCG

¹²⁾

가

가 , BCG 가

5 6 , 가

⁴⁾

가 BCG 73 7 (9.6%) 가

가
6 (87.5%)가

가

2 8

가

가

가

Oguz ¹⁹⁾ BCG

BCG

32.2%,

5 mm 10.5%, 6 10 mm

BCGiosis

가 10 14 mm 37.7

가

²²⁾

%, 15 mm

가 9.6% BCG

BCG

, 5 mm 6.8%(5), 6 10 mm 2.8%(2), 10 14 mm 19.2%

BCG

(14), 15 mm 71.2%(52) Oguz

1

¹⁹⁾

. BCG

90.4% 10

90%

mm

“strong”

French(Pasteur)

1173 P2 Danish 1331, “weak”

Glaxo

. BCG

107 Tokyo 172

Montreal,

Russia Tice가

strong weak

²⁵⁾

(1 3%)

BCG

가

가

(3, 5, 12, 23, 24)

BCG

가 0.7%

erythromycin, INH

INH

RFP

BCG

가

¹⁰⁾

BCG

French

⁴⁾

strain 1173 P2

Tokyo 172

French strain 1173 P2

Caglayan ⁶⁾

가 1.5 cm

2 3

1.5 cm

, 2

erythromycin

2

1.5 cm

2 4

,
 1 2 INH RFP , Caglayan ⁶⁾ BCG 2
 , 2 가 1.5 cm
 erythromycin 4
 INH RFP 가 가
⁴⁾, ¹⁰⁾, Oguz ¹⁹⁾
 가 , ¹⁰⁾ , ⁵⁾
 , Caglayan ⁶⁾
 가 1.5 cm , Noah ¹⁸⁾ INH
 erythromycin
 가 , ⁴⁾
 BCG 1 2 INH
 RFP
 . Caglayan ²⁷⁾ ,
 가
 Power ²⁶⁾ erythromycin , (incisional drain-
 가 age)
 BCG , ()
 , Noah ¹⁸⁾
 erythromycin (8)
 , Oguz ¹⁹⁾
⁴⁾ 2 erythromycin 가 3 cm
 . Oguz ¹⁹⁾ INH 가 ,
 가 , Ca- ,
 glayan ⁶⁾ 가 +INH 가 가
 가 , (erythromycin,
 INH, INH + RFP) 가 , 37 3 (8.1%)(1)
 2 가 , 5 (1) , 29
 (78.4%)
^{10), 15)} 가 ,
 , BCG
⁵⁾ INH INH
 RFP 6 , BCG
⁴⁾
 ,
 , BCG
 가 ,
 가 .

가 (8%), 64.3%(9) , 가

가 , 가 ($P<0.05$).

4) 가 36 23 (63.9%), 37 3 (8.1%) 가

: BCG BCG 가 36.1%(13) , 가 91.9%(29) 가

BCG 가 ($P<0.05$).

5) French strain 1173 P2 ($P=0.1$), ($P=0.005$).

: 1997 1 2000 5 6) ,

BCG 가 ($P=0.04$), 가

73 3 24 가 7) 가

(A : 2.0 cm , B : BCG : 2.0 3.0 cm, C : 3.0 cm) ,

1) BCG BCG

가

2) 가

1 22±2.5 mm, 1 25±3.3 mm , 1 43 17 (39.5%), 1 30 20 (66.6%) 1 1) , , , . BCG 1997;40:614-8. 2) , , , , . BCG

3) 가 29 8 (27.6 %) , 14 10 (71.4%), 48 ; 가 27.6 1998 10 16 17 ;

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