

원외 획득 폐렴

Community Acquired Pneumonia

134

Joon Chang, M.D.

Department of Internal Medicine

Yonsei University College of Medicine, Severance Hospital

E - mail : chang@yumc.yonsei.ac.kr

Abstract

Community acquired pneumonia is a common disease, and it is usually managed by empirical antibiotics therapy from several management guidelines. It is challenged by emergence of drug resistant bacterial strains, especially *Streptococcus pneumoniae* and recent increasing recognition for the mixed infection by atypical pneumonia pathogens such as *Mycoplasma*, *Chlamydia* and *Legionella* species. Even though community acquired pneumoniae caused by drug resistant *S. pneumoina* is common in Korea, the treatment results are good with current antibiotics. This review deals with important new findings and management issues of community acquired pneumonia in immunocompetent adults.

Keywords : Community acquired pneumonia

1
1/5
가 1~5%
12%
(1,
2). macolides, ketolides, fluoroquinolones,
carbapenems(meropenem, imipenem), linezolid
90
S. pneumoniae
가 10
S. pneumoniae 가
가
4 (1~4).

1.

(2)

	<i>Streptococcus pneumoniae</i> (<i>S. pneumoniae</i>), Anaerobes, Gram negative bacilli, <i>Mycobacterium tuberculosis</i>
/	<i>S. pneumoniae</i> , <i>Hemophilus influenzae</i> , <i>Moraxella catarrhalis</i> , <i>Legionella</i> species
	Anaerobes
	Influenza, <i>S. pneumoniae</i> , <i>Staphylococcus aureus</i> , <i>H. influenzae</i>
	Anaerobes, chemical pneumonitis,
() <i>P. aeruginosa</i> , <i>Pseudomonas cepacia</i> , <i>S. aureus</i>
	<i>S. aureus</i> , anaerobes, , <i>Pneumocystis carinii</i>
	Anaerobes
	<i>S. pneumoniae</i> , <i>P. aeruginosa</i>

S. pneumoniae, *Hemophilus influenzae*,
(重症度), *Moraxella catarrhalis* .
 , , *Legionella*, , *Klebsiella*
가 ,
(1~4). 가 가 가
(1)(4).
 .
가 가
 ,
 . 가
 , , ,
가 가
가 가
가 가
 .
S. pneumoniae 80%
(single rigor)
(vi- 가
rulence), , ,
 , , 가
 .

가 My- crackles) 80% (fine
coplasma, Legionella, Chlamydia
Legionella
AIDS 가 가 . *Mycoplasma pneu-*
moniae bronchial breath sounds, egophony(
(consolidation)
80%, 30%
60 ~ 80%, 30%, 40 ~ 50%,
(rigor) 15%
1.
S. pneumoniae
가 . *H. in-*
fluenzae, S. aureus, S. pneu-
moniae 가
Mycoplasma
Legionella influenza 가
가
1 가 10 가
() virus, 가
Mycoplasma, Chlamydia, Tularemia, Legionella 1990
. *S. pneumoniae* (atypi-
40% 가 가 cal pathogen pneumonia)
가 . *Mycoplasma pneumoniae, Chlamydia pneumoni-*
ae, Legionella species
가

3~40%

) , , ,

. , (20~40%), , phosphorus , , CPK 가, lactic dehydrogenase >700U/ml, .

Legionella

(2). Macrolide가 가

2~6%

quinolone

가 (2).

2.

, 가 , , , , , (dependent part) . Trans-tracheal aspirate

가 30%

가가

coliform bacteria

60%

가 (oximetry 가),

(CBC), 2

15,000~30,000/mm³

가

가

가

가

(2, 4).

가

90%가

40~65%

(4).

, 40~45%

가

3. *Legionella* sp.*Legionella* sp.

(40),

가

(

(2).

4). *Legionella* (2, , penicillin *S. pneumoniae* .

2. ≥ 25

< 10

1. , 24 , *P. carinii* 85%

10~30%, .

가 , (*Legionella*, influenza virus, , *P. carinii*)가 가 .

1~2 , 2~5 . *S. pneumoniae* Hemophilus

가 .

(colonization) .

. *S. pneumoniae* *Legionella*가 *S. pneumoniae* Hemophilus 가

가 . *Enterobacteriaceae* *S. aureus*

가 *Enterobacteriaceae* *S. aureus*

가 가 가

가 .

가

10~14 4~6 가

가

가 .

4. 가

S. pneumoniae Quellung

가 . Counter - immunoelectrophoresis 75 ~ 100%

가 가 . Coagglutination

latex agglutination

가 ,

50%

가 ,

Quellung *S. pneumoniae*

FDA

S. pneumoniae immunochromatographic membrane assay .

15 가 86%, 가 94%

S. pneumoniae 가

45 ~ 50%, *H. influenzae* 34 ~ (2). 가

47% ,

50 ~ 80%, 가 90% ,

10% 2 70 ~ 90%가 (4). 452

, *H. influenzae* 가 . *S. pneumoniae* 27

19 (70%)

3. 269 69 (26%)

25%, 가 가 (4).

20% . 가 ,

2 .

24 ~ 48 .

가 가 *S. pneumoniae*

가

가 (4).

Legionella 가 , 5%

40, IgG 4 가

, β -lactam

, *Legionella* MIF

. direct immunofluorescent anti- IgG 4 가 IgM 1:16

body staining 25 ~ 75%, 99.9% . IgG 1

L. pneumophila 가 2

Legionella 70% *L. pneumophila* 4 가

subgroup 1 ELISA plate (4). 1

. IgM 3 , IgG 8

50 ~ 60%, 95% . *L. pneumophila* sub- 가

group 1 *C. pneumoniae* . IgG

Legionella 가 가 IgM 가

. (2).

Legionella

. 1:256

Cold agglutinin 1:64 *M. pneumo-* 가 , 가

niae 가 30 ~ 60% 15% . IgM IgG

가 . *M. pneumoniae* IgM 가 가 .

1 가 2 ~ 12

. 가 7 ~ 10 5. 가

3 . *Mycoplasma*

가 가 .

mycoplasma

mycoplasma , ,

가 .

Chlamydia *Legionella* . *P. carinii*, *Mycobacterium* species,

cytomegalovirus ,

(2, 4). *Legionella* sp., ,

C. pneumoniae MIF IgM , , ,

PCR 가 .

, , , *S. pneumoniae* 26.8% 가 , *Klebsiella pneumoniae* 18.1%, *Pseudomonas aeruginosa* 11.8%, *S. aureus* 11.4% . 250 PCR *Mycoplasma pneumoniae* 9.2% *C. pneumoniae* 13.2% 가

M. pneumoniae, , *Legionella* spp. 2.3% .
C. pneumoniae, respiratory viruses, 10.1% .

(1). *S. pneumoniae* 가 가

가 . *S. pneumoniae* 34.3%, 22.8% .

가 .

가 가

가 . 8 (10, 11).
 가 30 가
 4 (2, .

4). 4 (8

(2).) (4).
S. pneumoniae *H. influenzae*

가

S. pneumoniae (Drug Resistant Pneumococcus, DRSP)
 capsular polysaccharide
 Quellung , (10, Penicillin (minimal inhibitory concentration, MIC)가 0.06 µg/ml
 가 , 0.12 ~ 1.0 µg/ml ()
 , 2.0 µg/ml
 , 585
 32.6% (15). 가 . penicillin MIC 4.0 µg/ml

(2). (16). , , macrolide
S. pneumoniae
cephalosporins , 가
cephalosporin *S. pneumoniae* 가
가 . (17).
DRSP 3
가 (2). , 65 ,
DRSP , ,
 β - lactam , ,
가 가 . 4 (2)(2).
MIC 4.0 μ g/ml DRSP cephalosporin β - lactams, sul-
가 famethoxazole/trimethoprim, macrolide, doxycycline
S. pneu-
moniae 1 μ g oxacillin disk 99%
, *S. pneumoniae* penicillin 가 80% 가
80% 20% (3). MIC
, Penicillin penicillin
65% . 가 amoxicillin(500~1,000mg 8)
, cephalosporins macolides
. Ceftriaxone cefotaxime
S. pneumoniae MIC 1.0 μ g/ml , 2 μ g/ml
106 *S. pneu-* , 4 μ g/ml ,
moniae MIC 2.0 μ g/ml imi-
penem/cilastin (4).
가 (16). Penicillin MIC 4.0 μ g/ml
S. pneumoniae 가 21 () fluoroquinolone, vancomycin, clin-
233 *S. pneumoniae* damycin (2). *S. pneumoniae*
128 (55%) fluoroquinolone gatifloxacin
25.3% , 29.6% (1 400mg 1), gemifloxacin(320mg 1 1), levo-

2.	가	(2)
1.	<i>S. pneumoniae</i>	
65		
3	β - lactam	
alcoholism		
	()	
2.		
	(nursing home)	
3. <i>Pseudomonas aeruginosa</i>		
	(,)	
1 10mg	prednisone	
1	1	

floxacin(1 750mg 1), moxifloxacin(1 400mg 1) (2, 4). moxifloxacin . Gatifloxacin gemifloxacin long QT , 가 long QT 가 . Gemi-floxacin 가 가 가 . Gatifloxacin 가 . Levofloxacin 750mg (4). Fluoroquinolone 가 가 . cipro-floxacin *S. pneumoniae* fluoroquinolone 가 . levofloxacin 1 500mg 750mg (18). ci-

profloxacin quinolone (2), 가 10% 가 . levofloxacin fluoroquinolone . Ketolides telithromycine(800mg 1 1) *H. influenzae* 가 . . Linezolid(600mg 2)가 DRSP 가 . Vancomycin (2). Penicillin *S. pneumoniae* 89%가 *S. pneumoniae* (4). Macrolide/azalide 가 in vivo - in vitro - paradox가 . macrolide MIC 8 μ g/ml macrolide 가 (18). *H. influenzae* *H. influenzae*가 50% , 30% β - lactamase (1), 2/3 cephalosporin, amoxicillin/clavulanic acid, ampicillin/sulbactam, doxycycline, fluoro-quinolone . , , 3 cephalosporin . sulfamethoxazole/trimethoprim

azithromycin (4, 13).
 ampicillin 1 clarithromycin 500mg /
 2 .
 . 3 ,
 10 ~ 14 (4, 13).
 21 가 .
 Azithromycin 5 ~ 10 (13).
 (1).
 , clindamycin 가
 penicillin G . Metronidazole
 microaerophilic strepto-
 cocci . Metronidazole peni- . 1 가
 cillin , amoxicillin/clavulanic acid , ,
 . ,
 imipenem, meropenem, chloramphenicol, . 50
 β -lactam/ β -lactamase inhibitor . , , , ,
 clindamycin 가 5 ,
 metronidazole penicillin , amoxicillin/clavuli- , I . 2
 nic acid (2, 4).
 PORT Severity Index(PSI)
 II ~ V (3, 4). I, II
 , IV V .
 III 가
 (4). 3 가
Legionella sp.
 erythromycin 2 ~ 4g \pm rifampicin),
 (300mg 2 600mg 1) fluoro- . PSI
 quinolone(ciprofloxacin 400mg 8 I ~ III (2, 4).
 750mg 12 , levofloxacin 500mg
 1) (12). erythromycin , , , 1
 azithromycin 500mg / , 2 , ,

3. PORT(Pneumonia Outcome Research Team)
(PSI)

	()
:	() - 10
	+10
	+30
	+20
	+10
	+10
	+10
	+20
≥ 30 /	+20
< 90 mmHg	+20
< 35 °C ≥ 40 °C	+15
≥ 125 /	+10
pH < 7.35	+30
BUN > 30 mg/dL	+20
Sodium < 130 mEq/L	+20
Glucose > 250 mg/dL	+10
Hematocrit $< 30\%$	+10
PaO ₂ < 60 mmHg or SpO ₂ $< 90\%$	+10
Pleural effusion	+10

(2).

Minor criteria

 > 30 , PaO₂/FiO₂ ratio < 250

mmHg,

, 90mmHg

60mmHg 5, Major criteria

, 48 가 50%

가, 4

, creatinine > 2 mg/dL

4. PSI

Algorithm*	
≤ 70	0.1%
71~90	0.6%
91~130	2.8%
> 130	8.2%
	29.2%

*

4 minor cri-
teria 2 major criteria 1

Group I. 가 가

Streptococcus pneumoniae, *Mycoplasma pneumo-*
niae, *Chlamydia pneumoniae*, respiratory viruses가

, 1%

Legionella sp.(), *Mycobacterium*
tuberculosis (5). 1~5%

50~90%

(2). *H. influenzae*가

가 가 (2).

macrolide

, 가 macrolide 가

doxycycline (5).

H. influenzae clarithromycin azithromy-
cin

(2).

erythromycin

macrolide

doxycycline

macrolide

5. Group . 가 , (2, 4)

<i>Streptococcus pneumoniae</i>	1. macrolide :	가. :
<i>Mycoplasma pneumoniae</i>	Azithromycin or	macrolide(erythromycin) doxycy-
<i>Chlamydia pneumoniae</i>	Clarithromycin*	cline
()	2. Doxycycline †	. (6.
<i>Hemophilus influenzae</i>		Group) :
Respiratory virus		1. fluoroquinolone
: <i>Legionella</i> ,		2. macrolide plus
		amoxicillin §
		3. macrolide** plus
		amox./clavulanic acid

* Erythromycin <i>Hemophilus influenzae</i>	,	macrolide가	.	가
† <i>Streptococcus pneumoniae</i>	가 doxycycline	가 macrolide	가	
§ amoxicillin 1g 3 8				
** amoxicillin/clavulanic acid : 3	amoxicillin	3~4g	amoxicillin 가,	amoxicillin 875mg/clavulanic acid
125mg extended release 2	2			

		erythromycin <i>in vitro</i> <i>H. influenzae</i>	
		, <i>S. pneumoniae</i> † tetracyclines	
Group II(6)	macrolide doxy-	macrolide clarithromycin,	
cycline	<i>S. pneumoniae</i>	azithromycin, roxithromycin, dirithromycin in	
<i>H. influenzae</i> †	가	vitro <i>M. pneumoniae</i> , <i>C. pneumoniae</i> , <i>L.</i>	
	,	<i>pneumophila</i> <i>S. pneumoniae</i> <i>H. influen-</i>	
(2)가		<i>zae</i> 가	
(3, 4 : , 2)		60	<i>H.</i>
		<i>influenzae</i>	(1, 2).
Penicillin β -lactam	β -lactam		10%
<i>S. pneumoniae</i>	, peni-		,
cillin cephalexin β -lactam	,		
<i>Mycoplasma pneumoniae</i> , <i>Chlamydia pneumoniae</i> ,			
<i>Legionella pneumophila</i> 가	.		,
erythromycin macrolide† 가			.

6. Group 가 & '±' (2, 4)

		* §	
<i>S. pneumoniae</i> (DRSP)	1. β - lactam(cefpodoxime,	가.	:
<i>M. pneumoniae</i>	cefuroxime, amoxicillin,		macrolide
<i>C. pneumoniae</i>	Amox./clav ; IV ceftriaxone		fluoroquinolone
Mixed infection	oral cefpodoxime)		:
(+ virus)	Plus	1.	fluoroquinolone
<i>H. influenzae</i>	Macrolide or doxycycline †	2.	macrolide+ β - lactam **
Enteric gram - negatives	2. fluoroquinolone †		
()			
Respiratory virus			
: <i>Moraxella catarrhalis</i> ,			
<i>Legionella</i> , (anaerobes),			

* , 3 (5)	
† amoxicillin 8 1g ; erythromycin <i>H. influenzae</i>	amoxicillin doxycycline
macrolide	
‡ fluoroquinolone : gatifloxacin, moxifloxacin, levofloxacin, gemifloxacin	
*§	
** - lactam : amoxicillin, amoxicillin/clavulanic acid, cefpodoxime, cefprozil, cefuroxime	1

Group II.

가

cephalosporin *S. pneumoniae*

in vitro cefpodoxime > cefuroxime > cefprozil > cefixime > cefaclor = loracarbef > cefadroxil = cephalexin (3).

DRSP, (1, 2)

 β - lactam (cefpo-

Group I

doxime, cefuroxime, amoxicillin, Amoxicillin/clavulanic acid 875mg/125mg bid ; IV ceftriaxone oral cefpodoxime) macrolide fluoroquinolone (2).

*S. pneumoniae*가 가

가 .

가

Amoxicillin *H. influenzae*가

cover macrolide doxycycline

Legionella sp.가 (2). β - lactam ceftriax-

(6)(2).

5%

one macrolide doxycycline

20%

(2).

(1). 50 ~ 90%

1 ~ 2

a. Cardiopulmonary disease ± modifying factor		가.	:
<i>S. pneumoniae</i> (DRSP)	1. IV β - lactam*(cefotaxime, ceftriaxone, ampicillin/sulbactam, ampicillin)	1.	fluoroquinolone
<i>H. influenzae</i>		2.	macrolide+ β - lactam*
<i>M. pneumoniae</i>			
<i>C. pneumoniae</i>	Plus		
Mixed infection(+)	Macrolide (IV or PO) or doxycycline*	.	:
Enteric gram - negatives		1.	macrolide+ β - lactam*
Aspiration (anaerobes)	2. fluoroquinolone IV	2.	fluoroquinolone
Virus			
<i>Legionella</i> spp.			
: , <i>Pneumocystis carinii</i>		()
b.			
<i>S. pneumoniae</i>	1. IV azithromycin (macrolide		
<i>H. influenzae</i>	allergy Doxycycline plus		
<i>M. pneumoniae</i>	β - lactam ; , Gram		
<i>C. pneumoniae</i>	,		
Mixed infection(+))		
Virus	2. fluoroquinolone		
<i>Legionella</i> spp.			
: , <i>Pneumocystis carinii</i>			

* Antipseudomonal agents cefepime, piperacillin/tazobactam, imipenem, meropenem

S. pneumoniae

Pseudomonas aeruginosa

†	β -lactam	β -lactamase	doxycycline	macrolide
---	-----------------	--------------------	-------------	-----------

cover가

[†] β -lactam : cefotaxime, ceftriaxone, ampicillin/sulbactam, ertapenem

Amoxicillin/ clavulanic acid		roquinolone		macrolide+	
amoxicillin	amoxicillin	β -lactam	β -lactam	가	
(amoxicillin	macrolide	fluoroquinolone		(4).	
	clindamycin	fluoroquinolone		,	
metronidazole	가 (2).	macrolide	amoxicillin(1g	3)
	3	,	macrolide	amoxicillin	.
			amoxicillin 875mg/clavulanic		
(5),	<i>S. pneumoniae</i>	acid 125mg	2	2	.
가	가				
	. 3	fluo-		. 3	flu-

oroquinolone β -lactam

가 , 가 , , , ,

Legionella sp.

가 가 , 가

60

macrolide fluo-

roquinolone (6).

7

5 ~ 25%

(2).

macrolide

fluoro-

quinolone , macrolide β -

10%

lactam β -lactam

40%

(2).

amoxicillin, amoxicillin/clavulanic acid, cefpo-
doxime, cefprozil, cefuroxime

β -lactam macrolide

amoxicillin/clavulanic acid

fluoroquinolone

(7 a).

clindamycin

*S. pneumoniae*가

β -lactam

β -lactam()

macrolide

fluoroquinolone (6).

(1).

Group III.

가

ampicillin/sulbactam,

ampicillin,

β -lactam

가

(3, 4)

clindamycin

metron-

group IIIa ,

idazole 가 (2).

S. pneumoniae,

group IVb(7 b)

azithromycin

fluoroqui-

가 . *S. pneumoniae*, *H. influenzae*,

nolone

(2). Azithromycin 1

(), gram - negative bacilli,

500mg

2 ~ 5

가 1

500mg

7 ~ 10

Legionella sp., *S. aureus*, *C. pneumoniae*, Respira-
tory viruses , *M. pneu-*

가

H. influenzae

moniae, *Moraxella catarrhalis*, *M. tuberculosis*

(7 a).

fluoroquinolone

macrolide

8. Group . ICU (2, 4)

	*	*
a. <i>P. aeruginosa</i>		
<i>S. pneumoniae</i> (DRSP)	IV β - lactam (cefotaxime, ceftriaxone)†	IV β - lactam‡
<i>Legionella</i> spp.	Plus	Plus
<i>H. influenzae</i>	IV Macrolide(azithromycin)	macrolide
Enteric gram negative bacilli		fluoroquinolone
<i>S. aureus</i>		
<i>M. pneumoniae</i>	IV fluoroquinolone	β - lactam allergy :
Respiratory virus		fluoroquinolone
: <i>C. pneumoniae</i> ,		± clindamycin
b. <i>P. aeruginosa</i> (, , ICU)		
	1. Selected IV anti - pseudomonal β - lactam(cefepime, imipenem, meropenem, piperacillin/tazobactam) Plus IV anti - pseudomonal quinolone (ciprofloxacin)	1. Antipseudomonal agent † Plus Ciprofloxacin
All of the above pathogen plus <i>P. aeruginosa</i>	2. Selected β - lactam(cefepime, imipenem, meropenem, piperacillin/tazobactam) † Plus IV aminoglycoside Plus IV macrolide or IV non - pseudomonal fluoroquinolone	2. Antipseudomonal agent Plus aminoglycoside Plus fluoroquinolone macrolide β - lactam allergy :
		1. Aztreonam Plus levofloxacin (750mg)
		2. Aztreonam Plus moxifloxacin gatifloxacin ± aminoglycoside

* fluoroquinolone

† Antipseudomonal agents cefepime, piperacillin/tazobactam, imipenem, meropenem

S. pneumoniae *H. influenzae* 가 *Pseudomonas aeruginosa*

‡ β - lactam 가 , β - lactam aztreonam aminoglycoside fluoroquinolone

§ β - lactam : cefotaxime, ceftriaxone, ampicillin/sulbactam, ertapenem

β - actam (7).

Group IV.

β - lactam cefotaxime, ceftriaxone, ampicillin/sulbactam, ertapenem (4).

1 1 ertapenem ceftriaxone

S. pneumoniae, *H. influenzae*,

Legionella pneumophila (8).

가 (4).

, , (4). β - lactam allergy가 fluoroquinolone
Pseudomonas aeruginosa clindamycin 가 .
Pseudomonas aeruginosa
10mg *Pseudomonas* 가
prednisolone *S. pneumoniae* legionella가
, 1 1 , (8 b)(2). *Pseudomonas aeruginosa*
, β - lactam 가
(2)(2). *S. aureus*가 1 ~ 22% β - lactam aztreonam aminoglyco-
(2). side fluoroquinolone .
M. pneumoniae, Respiratory viruses β - lactam 가
. 50% aztreonam levofloxacin(750mg) 가
. aztreonam moxifloxacin gati-
fluoroquinolone floxacin 가 aminoglycoside 가
. *P. aeruginosa* (4).
S. pneumoniae β - lactam *P. aeruginosa*
cefotaxime ceftriaxone 가 azithromycin
fluoroquinolone (8 가
a)(2). erythromycin .
Antipseudomonal agents cefepime, piperacillin/
tazobactam, imipenem, meropenem (11).
S. pneumoniae 가 Aminoglycosides
Pseudomonas aeruginosa 가
, ,
. fluoroquinolone 가 . *Pseudo-*
monas aeruginosa
Pseudomonas aeruginosa .
 β - lactam macrolide
fluoroquinolone ,
. β - lactam cefotaxime, ceftriaxone, .
ampicillin/sulbactam, ertapenem 가 가

가 .

Doxycycline, minocycline, chloramphenicol, sulfamethoxazole - trimethoprim, fluoroquinolones, linezolid 가

(1, 2).

가

가 (1~4). 7~14 가

(2). *S. pneumoniae* 7~10 (2) 72 가

(4) 가

(2). *C. pneumoniae* 7~14 (4). *Legionnaires* 가 10~14 14

10~21

(2, 4). *M. pneumonia* 10~14 (2) 가

S. aureus, *P. aeruginosa*, *Klebsiella species*, 2 (4). 2 100 / 37.8 (8)

14~21 , azithromycin 5 , (2).

가 . Azithromycin half-life가 11~14 erythromycin 1.5~3 , clarithromycin 3.8

fluoroquinolone 7 가 (2).

(2). 28~42

4~5 (13).

가 95%

(1, 7).

가 ,

S. aureus 24~48
 (2).
 24~48
 가 *Pseudomonas aeruginosa*
M. pneumoniae
 (4).
 48~72 가 (4).
 가
 72 (2).
 2~4
 , *S. pneumoniae* 10%
 2.5 6~7 (2).
M. pneumoniae 1~2
 . *S. pneumoniae* , 가 ,
 , *Legionella* ,
 가 *Legionella* ,
 5 가 4 *P. carinii*, 가
 , 20~40% 7 ,
 (1, 6).
S. pneumoniae 50 , bronchiolitis obliterans organizing
 X - ray 4 60% , pneumonia, Wegener ,
 가 ,
 , X - 가
 ray 25% 4 X - ray 가
 . *M. pneumoniae* *S.* 가
pneumoniae X - ray , *Legio-* . 72
nella sp. 가 6.5%,
 가 72 가
 7% , 41%

Legionella sp.

, *P. carinii*,

protected specimen brush

가

가

가

가 가

가

65

, asplenia,

, Hodgkin

, HIV

S. pneumoniae

가 가

influenza

(4). 5~6

가 65

(2).

가

2

가

가

가

가

가

가

2

1. American Thoracic Society. Guidelines for the initial management of adults with community - acquired pneumonia : Diagnosis, assessment of severity, and initial antimicrobial therapy. Am Rev Respir Dis 1993 ; 148 : 1426 - 78
2. American Thoracic Society. Guidelines for the management of adults with community - acquired pneumonia : Diagnosis, assessment of severity, antimicrobial therapy, and prevention. Am J Respir Crit Care Med 2001; 163 : 1730 - 54
3. Bartlett JG, Dowell SF, Mandell LA, File TM, Musher DM, Fine MJ. Practice guidelines for the management of community - acquired pneumonia in adults : Guideline from the Infectious Diseases Society of America. Clin Infect Dis 2000 ; 31 : 347 - 82
4. Mandell LA, Bartlett JG, Dowell SF, File TM, Musher DM, Whitney C. Update of practice guidelines for the management of community - acquired pneumonia in immunocompetent adults. IDSA guidelines. Clin Infect Dis 2003 ; 37 : 1405 - 33
5. Swartz MN. Approach to the patient with pulmonary infections. In : Fishman AP, Elias JA, et al. ed. Fishman's Pulmonary diseases and disorders. 3rd ed. New York : McGraw - Hill, 1998 : 1905 - 37

6. Donowitz GR, Mandell GL : Acute pneumonia. In : Mandell GL, Bennet JE, Dolin R, eds. Principles and practice of infectious diseases. 4th ed. New York : Churchill Livingstone, 1995 : 619 - 37
7. Bartlett JG, Mundy LM. Community - acquired pneumonia. N Engl J Med 1995 ; 333 : 1618 - 24
8. Pomilla PV, Brown RB. Outpatient treatment of community - acquired pneumonia in adults. Arch Intern Med 1994 ; 154 : 1793 - 1802
9. Brown PD, Lerner SA. Community - acquired pneumonia. Lancet 1998 ; 352 : 1295 - 1302
10. . 1997 ; 40 : 533 - 47
11. . 2000 ; 58 : 128 - 40
12. Stout JE, Yu VL. Legionellosis. N Engl J Med 1997 ; 337 : 682 - 7
13. Sanford JP, Gilbert DN, Sande MA. The Sanford guide to antimicrobial therapy. 29th ed. Antimicrobial Therapy Inc., Vienna(VA, USA), 1999
14. . , 2004 : 711 - 31
15. . 2001 ; 33 : 1 - 7
16. Choi EH, Lee HJ. Clinical outcome of invasive infections by penicillin - resistant *Streptococcus pneumoniae*. Clin Infect Dis 1998 ; 26 : 1346 - 54
17. Song JH, Jung SI, Ki HK, Shin MH, Ko KS, So T, et al. Clinical outcomes of pneumococcal pneumonia caused by antibiotic-resistant strains in Asian countries : a study by the Asian network for surveillance of resistant pathogens. Clin Infect Dis 2004 ; 38 : 1570 - 8
18. Feldman C. Clinical relevance of antimicrobial resistance in the management of pneumococcal community - acquired pneumonia. J Lab Clin Med 2004 ; 143 : 269 - 83