The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Olgu Eşliğinde Çoklu İlaç Dirençli Gram-Negatif Etkenlere Yönelik Tedavi

Prof. Dr. Emine ALP

Erciyes Üniversitesi Tıp Fakültesi Enfeksiyon Hastalıkları ve Klinik Bakteriyoloji A.D.

Kayseri

Sunum Planı

- Olgu
- Tedavi seçenekleri
- Sonuç

OLGU

- Y.Ö.
- 54 y, E, Kayseri,
- ÖG: Hipertansiyon ve KAH

OLGU
Hikaye

- **Şikayeti:** İshal, öksürük, nefes darlığı
- 08.01.2016 tarihinde halsizlik, ateş, yaygın vücut ağrısı şikayeti başlamış
- Bir gün sonra ishal ve kuru öksürük şikayeti eklenmiş
- Takibinde nefes darlığı gelişen hasta 10.01.2016 tarihinde Kayseri Eğitim Araştırma Hastanesi Enfeksiyon Hastalıkları bölümüne başvurmuş

OLGU
Hikaye

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

- İnfluenza pnömonisi ön tanısı ile Enfeksiyon Hastalıkları servisine yatırılan hastadan solunum yolu örnekleri gönderilmiş

- **Sefaperazon-sulbaktam+klaritromisin+ oseltamivir** tedavisi başlanmış

OLGU
Hikaye

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

- H1N1 PCR pozitif
- Servis takibinde solunum sıkıntısı ve hipoksisi olan hasta 13.01.2016 tarihinde YBÜ'de mekanik ventilatöre bağlanmış. Genel durumu düzelmeyen hasta 18.01.2016 tarihinde fakültemiz Dahiliye Yoğun Bakım Ünitesine sevk edilmiş
- Hastanın antibiyotik tedavisi meropenem+ linezolid olarak düzenlenmiş
- Oseltamivir tedavisi 5 güne tamamlanarak kesilmiş

OLGU
Fizik Muayene

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Ateş:38,4 °C , Nabız:115/dk, TA: 100/60 mmHg

Genel durumu kötü, şuuru kapalı, entübe

Akciğerde yaygın ralleri mevcut

Kalp taşikardik

Pürülan sekresyonu mevcut

OLGU
Laboratuvar

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Tarih	Beyaz Küre	Neu(%)	Hb	Plt	BUN/Cr	Na/K	AST/ALT	LDH	CRP	Procalcitonin
18.01.2016	**10370**	**%92**	13	282000	22/0,77	134/5,2	**46**/30	**914**	**201**	**0,85**

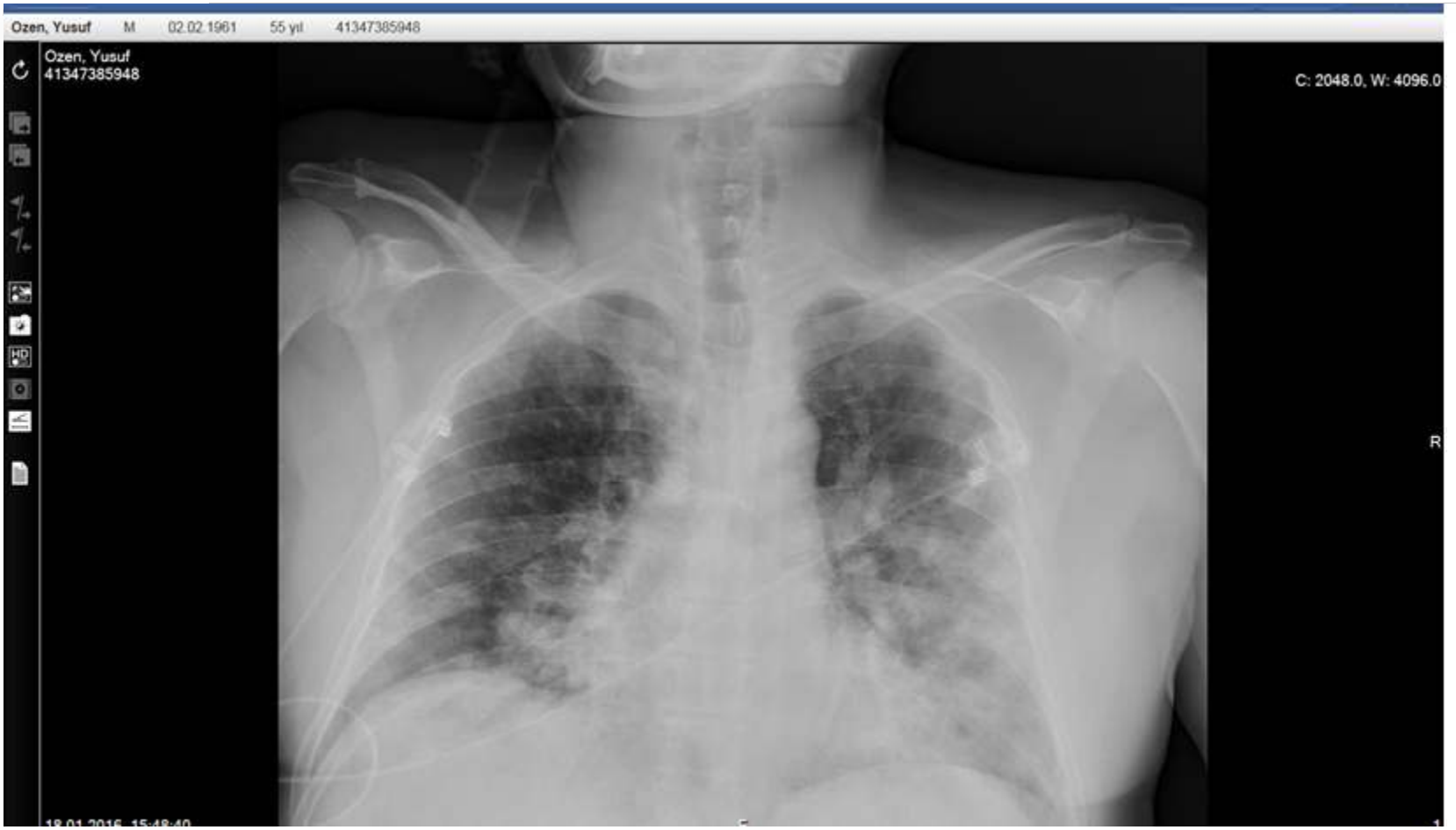
Kan gazı

pH	7,50
PO_2	65
PCO_2	26
SO_2	91
$cHCO_3$	20,6
laktat	1,99

ETA Gram boyamada: Bol pnl, gram negatif basil hakimiyeti mevcut

OLGU
Radyoloji

The image cannot

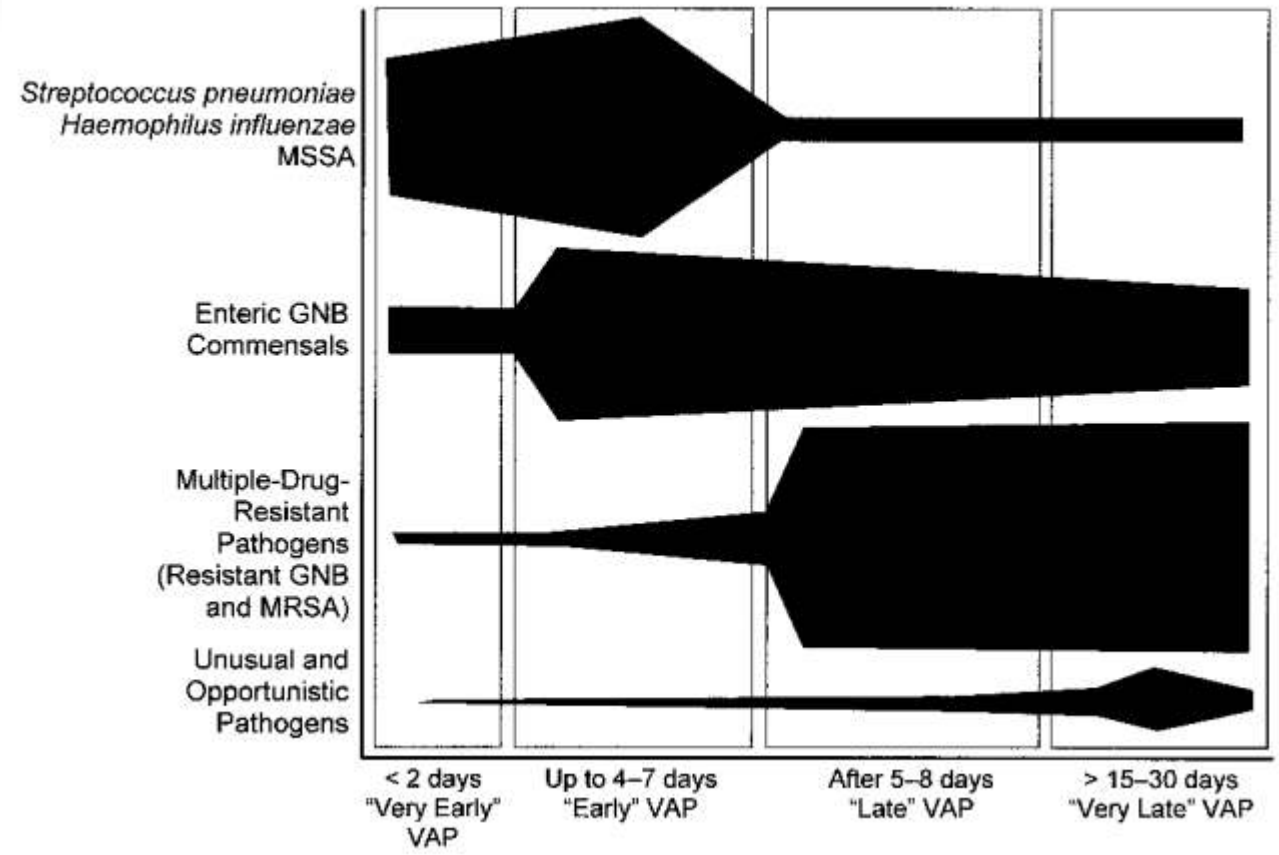


OLGU
Tanınız Nedir?

Ventilatör ilişkili pnömoni

- Invaziv mekanik ventilasyon desteğindeki hastada, entübasyondan 48-72 saat sonra gelişen pnömoni
- Yeni veya ilerleyici infiltrasyon
- Sistemik enfesiyon bulguları (ateş, beyaz kürede artış)
- Balgam pürülansında artış
- Etken izolasyonu

OLGU
Etken Nedir?



Park DR. The microbiology of ventilator-associated pneumonia. Respir Care 2005;50:742-65

Dirençli Mikroorganizma Ne Zaman Düşünülmeli?

- Antibiyotik kullanımı: 90 gün içinde
- Hastanede yatış öyküsü: (>5 gün)
- Toplumda ve hastanede antibiyotik direncinin yüksek olması
- Sağlık hizmeti ilişkili enfeksiyon
  - Hastanede yatış : 90 gün içinde > 2gün
  - Bakımevinde yaşamak
  - Evde antibiyotik infüzyonu
  - Kronik diyaliz: 30 gün içinde
  - Evde yara bakımı
  - Evde beraber yaşayan kişilerde ilaca dirençli patojen taşıyıcılığı
- İmmünosüpressif hastalık veya tedavi

Sorun Olan Dirençli Mikroorganizmalar

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

***E** nterococcus faecium*

***S** taphylococcus aureus*

***C** lostridium difficile*

***A** cinetobacter baumannii*

***P** seudomonas aeruginosa*

***E** nterobacteriaceae*

Peterson LR. Clin Infect Dis 2009;49:992

Withdrawal of *Staphylococcus aureus* from intensive care units in Turkey

Hakan Erdem MD[a,*], Murat Dizbay MD[b], Selma Karabey MD[c], Selcuk Kaya MD[d], Tuna Demirdal MD[e], Iftihar Koksal MD[d], Asuman Inan MD[f], Ibrahim Erayman MD[g], Oznur Ak MD[h], Aysegul Ulu-Kilic MD[i], Omer Karasahin MD[b], Ayhan Akbulut MD[j], Nazif Elaldi MD[k], Gulden Yilmaz MD[l], Aslihan Candevir MD[m], Hanefi Cem Gul MD[n], Ibak Gonen MD[o], Oral Oncul MD[a], Turan Aslan MD[p], Emel Azak MD[q], Recep Tekin MD[r], Zeliha Kocak Tufan MD[s], Ercan Yenilmez MD[a], Bilgin Arda MD[t], Gokay Gungor MD[u], Birsen Cetin MD[v], Sukran Kose MD[w], Hale Turan MD[x], Halis Akalin MD[y], Oguz Karabay MD[z], Aygul Dogan-Celik MD[aa], Adem Albayrak MD[bb], Tumer Guven MD[cc], Guven Celebi MD[dd], Nail Ozgunes MD[ee], Yasemin Ersoy MD[ff], Fatma Sirmatel MD[gg], Nefise Oztoprak MD[hh], Ilker Inanc Balkan MD[ii], Fatma Nurhayat Bayazit MD[jj], Hasan Ucmak MD[kk], Serkan Oncu MD[ll], Davut Ozdemir MD[mm], Derya Ozturk-Engin MD[f], Mehmet Bitirgen MD[g], Fehmi Tabak MD[ii], Filiz Akata MD[aa], Ayşe Willke MD[q], Levent Gorenek MD[a], Salman Shaheer Ahmed MS[i], Yesim Tasova MD[m], Asim Ulcay MD[a], Saim Dayan MD[r], Saban Esen MD[bb], Hakan Leblebicioglu MD[bb], Begin Altun PhD[nn], Serhat Unal MD[nn]

36 üçüncü basamak hastane, 88 YBÜ

Pathogen microorganisms responsible for HAIs in participant ICUs

Microorganism	2008 (n = 1,892), n (%)	2011 (n = 2,339), n (%)	χ^2	Difference (95% CI)	*P* value
*S aureus**	284 (15)	172 (7.3)	63.85	7.7 (5.76-9.67)	**<.0001**
MRSA	241 (12.7)	128 (5.5)	67.25	7.2 (5.42-9.02)	**<.0001**
Coagulase-negative staphylococci	110 (5.8)	139 (5.9)	0.01	0.10 (0-1.54)	.943
Enterococci	158 (8.3)	173 (7.4)	1.06	0.90 (0-2.58)	.304
Other gram-positive cocci	21 (1.2)	18 (1)	0.23	0.20 (0-0.90)	.635
Acinetobacter spp	414 (21.9)	671 (28.6)	24.31	6.7 (4-9.33)	**<.0001**
P aeruginosa	262 (13.8)	353 (15.1)	1.32	1.30 (0-3.45)	.25
Escherichia coli	192 (10.1)	227 (9.7)	0.15	0.40 (0-2.26)	.703
Klebsiella spp	163 (8.6)	194 (8.3)	0.09	0.30 (0-2.04)	.769
Enterobacter spp	45 (2.4)	55 (2.3)	0.01	0.10 (0-1.08)	.911
S maltophilia	21 (1.1)	26 (1.1)	0.02	0.40 (0-0.66)	.882
Other gram-negative bacilli	60 (3.3)	102 (4.4)	3.09	1.1 (0-2.29)	.079
Candida spp	162 (8.5)	209 (8.9)	0.16	0.40 (0-2.13)	.686

Am J Infect Control 2013;41:1053-8.

Ventilator-Associated Pneumonia in Patients with 2009 Pandemic Influenza A (H1N1) Infection: An Observational Study

D. Curcio, L. Ferreira Cabrera, A. Duarte, E. Valencia, C.H. Paz Chávez, C. Ibáñez-Guzmán, M. Játiva, L. Soto Germani, J.C. Fernández mercado, Z.U. Contreras, F. Molina Saldarriaga, I. Ramos Palomino & A. Alí

- 13 YBÜ-Latin Amerika ülkeleri
  - Arjantin, Bolivia, Şili, Kolombiya, Ekvator
- 59 erişkin hasta, PCR ile H1N1 kanıtlanmış
- 54 (%92) hastada VİP gelişmiş
- VİP gelişim süresi ortalama 9.5 gün (5-16 gün)

J Chemotherapy 2010;22:428-430

Ventilator-Associated Pneumonia in Patients with 2009 Pandemic Influenza A (H1N1) Infection: An Observational Study

D. Curcio, L. Ferreira Cabrera, A. Duarte, E. Valencia, C.H. Paz Chávez, C. Ibáñez-Guzmán, M. Játiva, L. Soto Germani, J.C. Fernández mercado, Z.U. Contreras, F. Molina Saldarriaga, I. Ramos Palomino & A. Alí

Etkenler

- 31/32 hastada (%97) 41 mikroorganizma izole edildi (%69 monomikrobiyal, %31 polimikrobiyal)
  - *Acinetobacter* (%72)
  - MRSA (%37.5)
  - ESBL pozitif *Enterobacteriaceae* (%10)
  - *P.aureginosa* (%6)
  - *S.maltophilia* (%3)

J Chemotherapy 2010;22:428-430

Ventilator-Associated Pneumonia in Patients with 2009 Pandemic Influenza A (H1N1) Infection: An Observational Study

D. Curcio, L. Ferreira Cabrera, A. Duarte, E. Valencia, C.H. Paz Chávez, C. Ibáñez-Guzmán, M. Játiva, L. Soto Germani, J.C. Fernández mercado, Z.U. Contreras, F. Molina Saldarriaga, I. Ramos Palomino & A. Alí

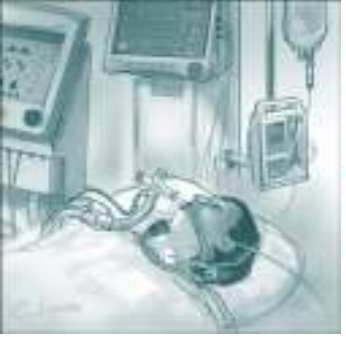
The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

TABLE 1- *Characteristics of 59 hospitalized patients who were infected with influenza A (H1N1)*

Acinetobacter spp.

	Global and Sub-set of patients						
	Global (n=59)	VAP (n=32)	Non-VAP (n=27)	*p*	Non-bacteriemic VAP (n=15)	Bacteriemic VAP (n=17)	*p*
Male; *n (%)*	29 (49)	17 (53)	12 (45)	0.6869	8 (54)	9 (53)	0.7393
Age; *mean (range)*	45.6 (18-80)	47.5 (18-80)	43.7 (18-73)	0.2711	46 (18-80)	49 (18-73)	0.2436
Risk factors; *n (%)*	40 (68)	20 (61)	20 (74)		8 (53)	12 (70.5)	
APACHE II; *mean (range)*	18.2 (1-39)	18.4 (1-39)	18 (3-36)	0.7990	17.8 (1-36)	19 (1-39)	0.6098
• *≤15*	26 (44)	13 (41)	13 (48)	0.7515	7 (47)	6/17 (35)	0.7695
• *>15*	33 (56)	19 (59)	14 (52)	0.7515	8 (53)	11/17 (65)	0.7695
SOFA; *mean (range)*	8.5 (2-18)	8 (3-16)	9 (2-18)	0.2244	8.8 (2-18)	7.2 (3-16)	0.2539
Days of MV, *mean (range)*	10.9 (1-72)	11.9 (1-46)	9.77 (1-72)	0.6588	13.3 (1-46)	9.8 (1-34)	0.9803
LOS; *mean (range)*	12.3 (1-72)	13.2 (1-46)	11.4 (1-72)	0.7732	15.1 (1-72)	11.3 (1-34)	0.4698
Outcomes							
• *Clinical success*	28 (47.5)	15 (47)	13 (48)	0.8697	9 (60)	6/17 (35)	0.2971
• *Failure*	30 (51)	17 (53)	13 (48)	0.9048	6 (40)	11/17 (65)	0.2971
• *Indeterminate*	1 (2)	0	1 (4)	0.9316	0	0	NA
Mortality; *n (%)*	29 (49)	19 (59)	10 (37)	0.1475	13 (76.5)	6 (40)	0.0826

J Chemotherapy 2010;22:428-430



American Thoracic Society Documents

Guidelines for the Management of Adults with Hospital-acquired, Ventilator-associated, and Healthcare-associated Pneumonia

Potential Pathogens	Combination Antibiotic Therapy*
Pathogens listed in Table 3 and MDR pathogens *Pseudomonas aeruginosa* *Klebsiella pneumoniae* (ESBL$^+$)† *Acinetobacter* species†	Antipseudomonal cephalosporin (cefepime, ceftazidime) *or* Antipseudomonal carbepenem (imipenem or meropenem) *or* β-Lactam/β-lactamase inhibitor (piperacillin–tazobactam) *plus* Antipseudomonal fluoroquinolone† (ciprofloxacin or levofloxacin) *or* Aminoglycoside (amikacin, gentamicin, or tobramycin) *plus*
Methicillin-resistant *Staphylococcus aureus* (MRSA) *Legionella pneumophila*†	Linezolid or vancomycin‡

Am J Respir Crit Care Med 2005; 171:388–416.

Ventilator-Associated Pneumonia in Patients with 2009 Pandemic Influenza A (H1N1) Infection: An Observational Study

D. Curcio, L. Ferreira Cabrera, A. Duarte, E. Valencia, C.H. Paz Chávez, C. Ibáñez-Guzmán, M. Játiva, L. Soto Germani, J.C. Fernández mercado, Z.U. Contreras, F. Molina Saldarriaga, I. Ramos Palomino & A. Alí

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

TABLE 2 - *Antibiotic treatment of 59 hospitalized patients who were infected with influenza A (H1N1)*

	Group I (n=27)	Gruop II (n=25)	Group III (n=7)
First course of antibiotic			
• Ceftriaxone + macrolides or fluorquinolones; *n (%)*	18 (66)	18 (72)	7 (100)
• Piperacillin/tazobactam + macrolides; *n (%)*	5 (19)	4 (16)	0
• Fluorquinolones alone; *n (%)*	4 (15)	3 (12)	0
Days; mean (*range*)	10.4 (1-20)[1]	7.88 (1-14)[2]	5.6 (1-13)[3]
Second course of antibiotic			
• Vancomycin + carbapenems; *n (%)*	NA	12 (48)	3 (43)
• Vancomycin + pip/taz or BEC; *n (%)*	NA	10 (40)	3 (43)
• Carbapenems alone; *n (%)*	NA	3 (12)	1 (14)
Days; mean (range)	NA	10.8 (2-25)[2]	11.5 (1-17)[3]
Third course of antibiotic			
• Tigecycline alone; *n (%)*	NA	NA	2 (28.5)
• Tigecycline + colistin; *n (%)*	NA	NA	3 (43)
• Tigecycline + aminoglycosides; *n (%)*	NA	NA	2 (28.5)
Days; mean (range)	NA	NA	9.3 (5-20)[3]

Group I: patients without VAP who received only one course of antibiotics; Group II: patients with VAP who received 2 courses of antibiotics; and Group III : patients with VAP who received 3 courses of antibiotics.
BEC=broad-spectrum cephalosporins
1 vs 2v3 p 0.0000

J Chemotherapy 2010;22:428-430

OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

- Hastaya VİP tanısı ile dış merkezde 18.01.2016 tarihinde başlanan meropenem +linezolid tedavisine devam edildi

- Kültürleri tekrarlandı

OLGU
Tedavi

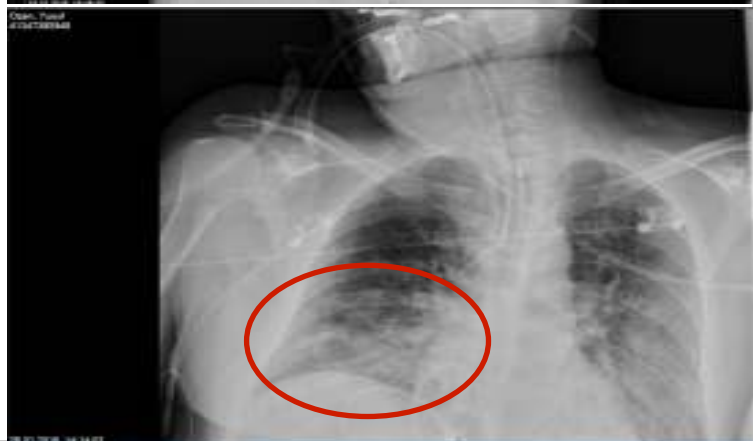
The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

18.01.2016	
Kan Kültürü	Üreme yok
ETA Kültürü	Üreme yok
İdrar Kültürü	Üreme yok

OLGU
Tedavi

25.01.2016

- Meropenem+Linezolid tedavisinin 8. günü
- Ateş yüksekliği devam ediyor
- MV desteklerinde artış var
- Akciğer sekresyonlarında artış var



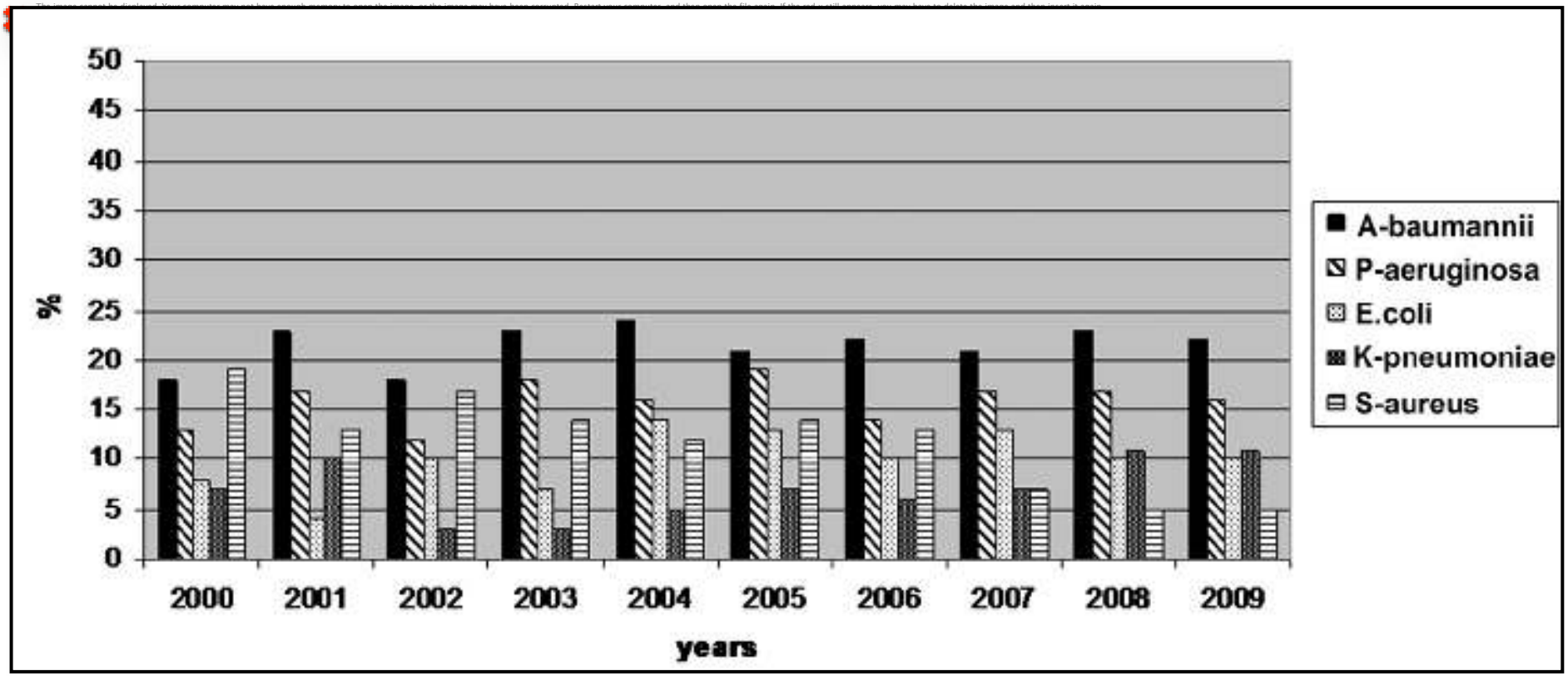
Tarih	CRP	Prokalsitonin
18.01.2016	201	0,85
25.01.2016	186	1,48

OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Changing pattern of antibiotic susceptibility in intensive care units: Ten years experience of a university hospital

Emine Alp [a,*], Bilge Kiran [b], Dilek Altun [b], Gamze Kalin [a], Ramazan Coskun [c], Murat Sungur [c], Aynur Akin [d], Duygu Percin [e], Mehmet Doganay [a]



Anaerobe 2011;17:422-425

Changing pattern of antibiotic susceptibility in intensive care units: Ten years experience of a university hospital

Emine Alp [a,*], Bilge Kiran [b], Dilek Altun [b], Gamze Kalin [a], Ramazan Coskun [c], Murat Sungur [c], Aynur Akin [d], Duygu Percin [e], Mehmet Doganay [a]

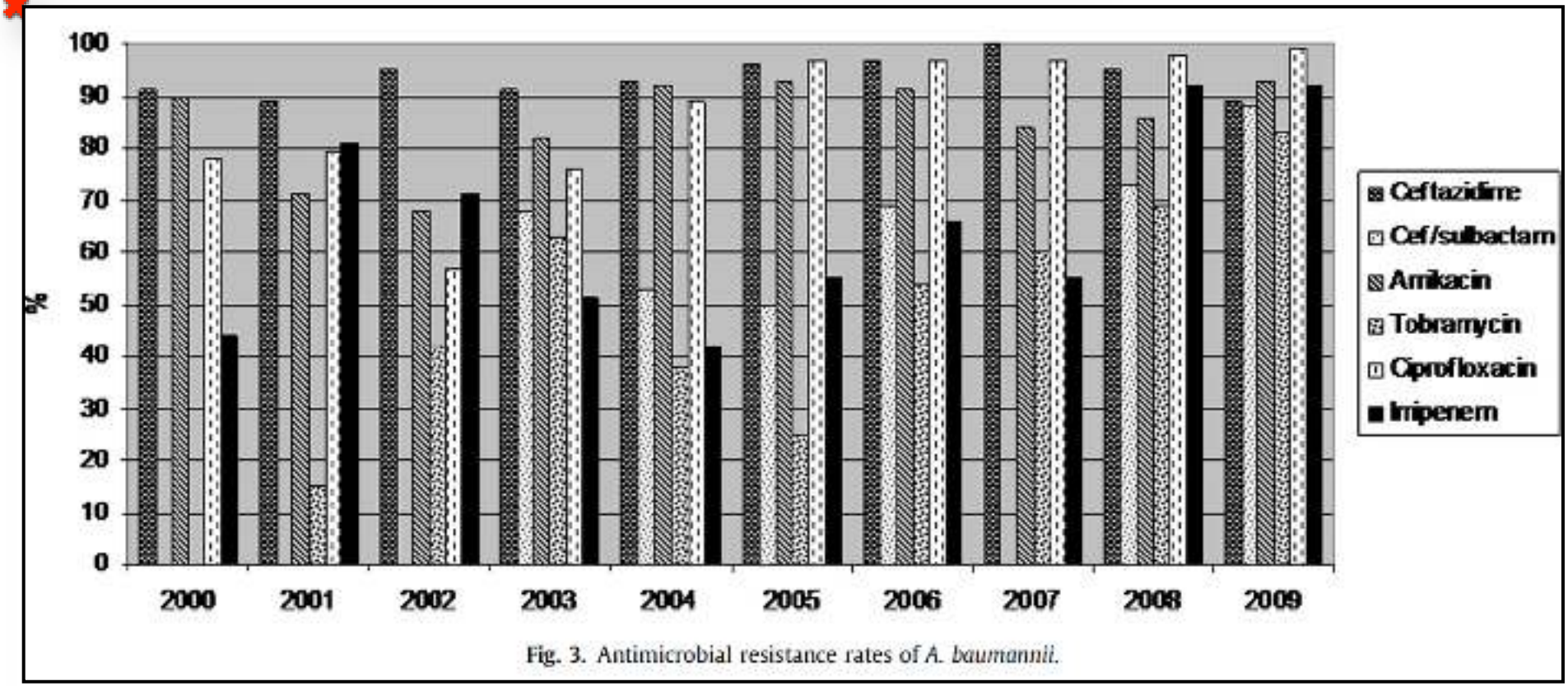


Fig. 3. Antimicrobial resistance rates of *A. baumannii*.

Anaerobe 2011;17:422-425

Changing pattern of antibiotic susceptibility in intensive care units: Ten years experience of a university hospital

Emine Alp [a,*], Bilge Kiran [b], Dilek Altun [b], Gamze Kalin [a], Ramazan Coskun [c], Murat Sungur [c], Aynur Akin [d], Duygu Percin [e], Mehmet Doganay [a]

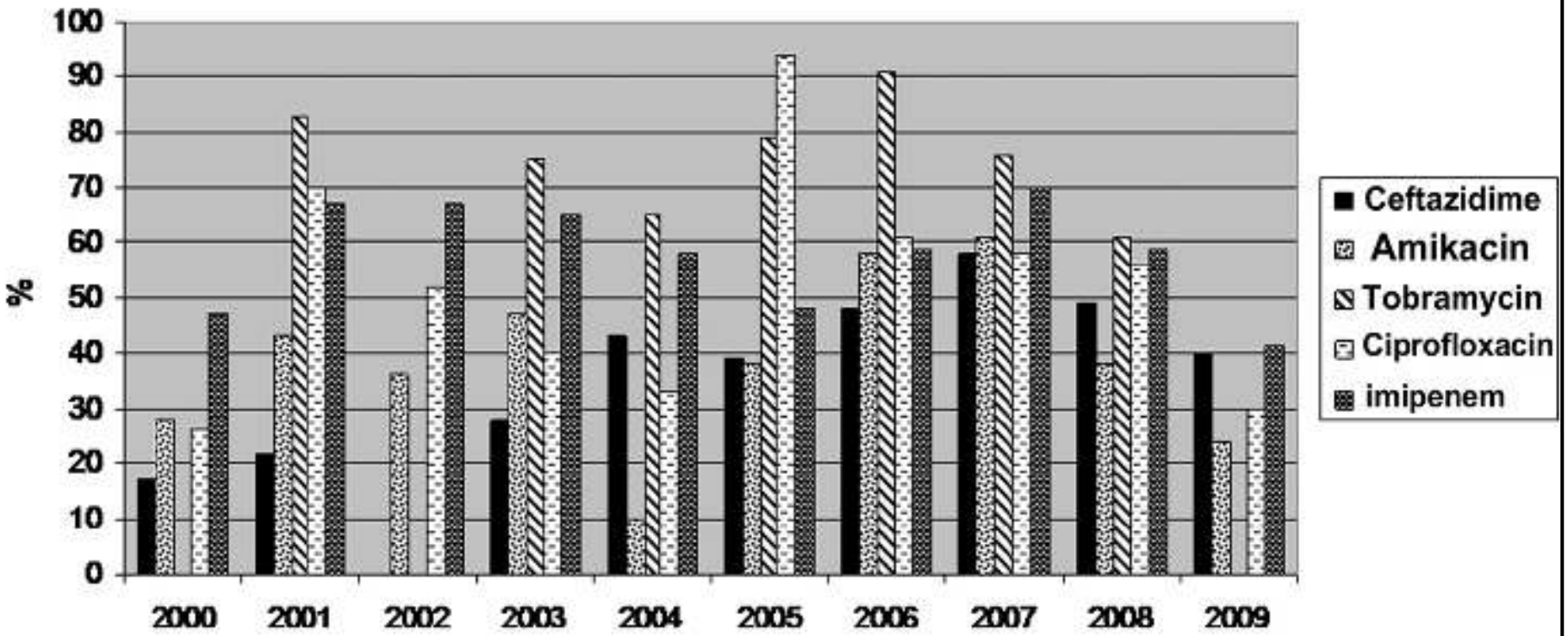


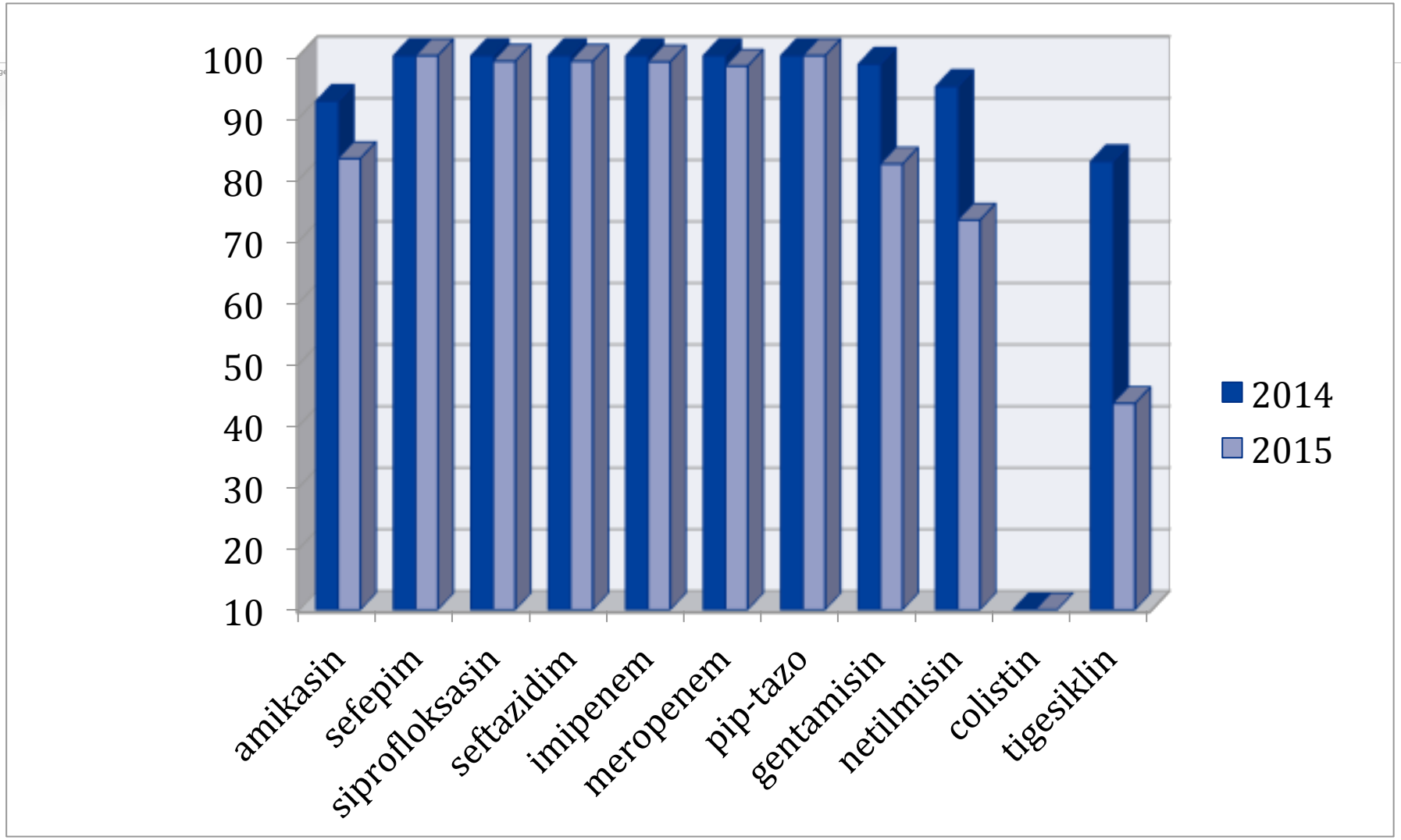
Fig. 4. Antimicrobial resistance rates of *P. aeruginosa*.

Anaerobe 2011;17:422-425

Ventilatör İlişkili Pnömonilerden Sorumlu Mikroorganizmalar 2015

Mikroorganizmalar	DYBÜ	BCYBÜ	GCYBÜ	ARYBÜ	GHYBÜ	YANIK	NYBÜ	TOPLAM 2014	TOPLAM 2015
A.baumannii	11	10	4	13	7	-	-	62	**45**
P.aeruginosa	15	5	7	5	5	-	-	32	**37**
K.pneumoniae	4	1	6	8	3	-	-	9	**22**
E.coli	-	-	3	-	1	-	-	7	**4**
S.maltophilia	-	-	1	-	-	-	-	7	**1**
K.oxytoca	1	-	-	1	-	-	-	-	**2**
Gram negatif basil	1	-	-	-	1	-	-	1	**3**
E.cloacae	-	-	-	1	-	-	-	2	**1**
E.aerogenes	-	-	-	1	-	-	-	1	**1**
H.influenzae	-	-	-	1	-	-	-	11	**1**
Etkensiz	5	5	6	2	2	-	-	9	**20**
Toplam	**37**	**21**	**27**	**32**	**19**	-	-	141	**136**

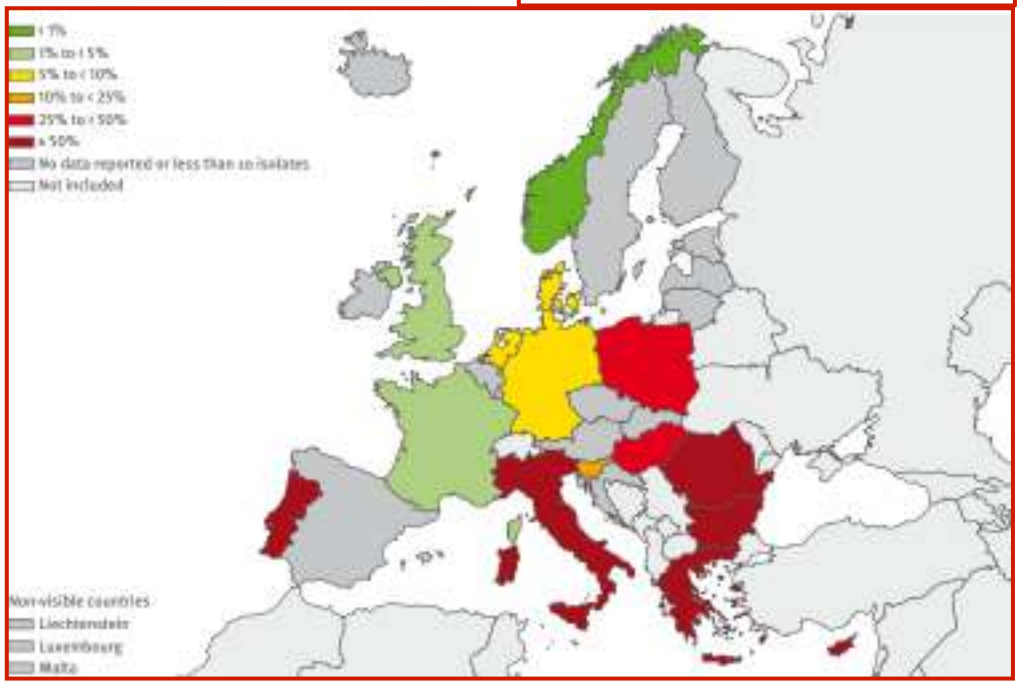
A.baumannii Antibiyotik Direnci



A cinetobacter baumannii

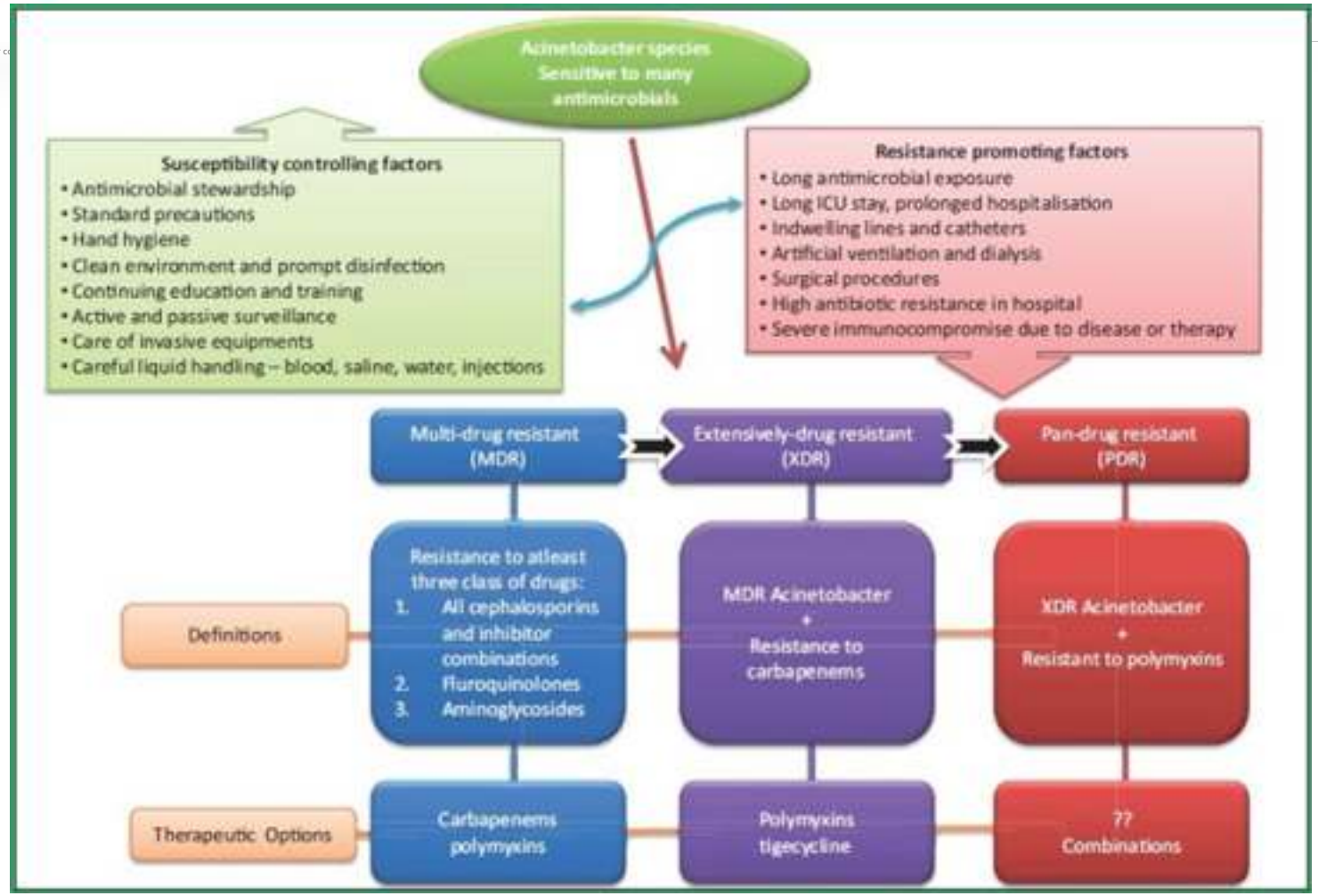
Karbapenem direnci

- Pnömoni
- Bakteriyemi
- Cerrahi alan enfek.
- Üriner sistem enfek.



A cinetobacter baumannii

Tedavi Seçenekleri



J Global Infectious Dis 2010;2:291-304

Kolistin

- Polimiksin E

- Bakterisidal

Doz

İntravenöz: 2.5-5 mg/kg (31.250-62.500 IU/kg) / gün 2-4 eşit doz (1 mg=12 500 IU) (2-3X80-160-240 mg)

Aerosolize: 80 mg (1 million IU) every 12 h

İntraventricular: 1.6 mg-20 mg /day

Kolistin

	Colomycin injection	Coly-Mycin M Parenteral
Manufacturer	Dumex-Alpharma A/S,	Parkedale Pharmaceuticals, Rochester,
Main distributors		nc, Bristol, als (Australia/ , NSW, fizer
Labelled content		
Mass of colistime sodium dry powc		
Appearance		hilised cake
Recommended d		in base equivalent er day
	80–160 mg colistimethate sodium three times per day	
Product-recommended upper limit dose for a 60 kg patient*	480 mg of colistimethate sodium per day	800 mg of colistimethate sodium per day

*For patients with normal renal function.

1 MU kolimisin=80 mg CMS=33.3 mg kolistin baz aktivitesi

Kolistin

Farmakokinetik

- Kolistimethanosulfonate (KMS)-kolistine hidrolize olur
- **Atılım:** KMS böbrekten atılır, ancak kolistin renal tübüler absorbsiyon ile alınır ve böbrek dışı yollarla atılır
- Yoğun bakım hastalarında klirens ↓ ve yarı ömrü uzun
- Yüksek doz ve uzun aralıklarla uygulama

Farmakodinamik

- Konsantrasyona bağlı etki
- Kalıcı etki

Kolistin

- Akciğer ve BOS'a geçişi zayıf
- Klinik başarı %25-77
- Yan etkiler

Acta Medica Mediterranea, 2014, 30: 1137

EFFICACY OF COLISTIN AND NON-COLISTIN MONOTHERAPIES IN MULTI-DRUG RESISTANT *ACINETOBACTER BAUMANNII* BACTEREMIA/SEPSIS

OGUZ KARABAY[1], AYSE BATIREL[2], ILKER INANC BALKAN[3], CANAN AGALAR[4], SERIFE AKALIN[5], OZLEM ALICI[4], EMINE ALP[6], F AYBALA ALTA[7], N ALTIN[8], FERHAT ARSLAN[9], TURAN ASLAN[10], NURAL BEKIROGLU[11], SALIH CESUR8, AYGUL DOGAN CELIK[12], MUSTAFA DOGAN[13], BULENT DURDU[14], FAZILET DUYGU[15], AYNUR ENGIN[16], DERYA OZTURK ENGIN[17], IBAK GONEN[18], ERTUGRUL GUCLU1, TUMER GUVEN[19], CIGDEM ATAMAN HATIPOGLU[20], SALIH HOSOGLU[21], MUSTAFA KARAHOCAGIL[22], AYSEGUL ULU KILIC[6], BAHAR ORMEN[23], DAVUT OZDEMIR[24], SERDAL OZER[3], NEFISE OZTOPRAK[25], NURBANU SEZAK[24], VEDAT TURHAN[26], N TURKER[24], HAVA YILMAZ[27]

Variable	ColistinMonotherapy	Other monotherapies	P value
	n (%)	n (%)	
Age (years± SD)	58.2 ± 20.6	61.7± 17.2	0.41
Gender (male/female)	15/21	23/25	0.57
Hospital stay prior to MDR- AB (mean ±SD, days)	22.3±19.9	28.6±30.6	0.3
ICU stay prior to MDR-AB (mean ±SD, days)	18.9±20.9	22.4±31.2	0.58
Pitt bacteremia score (mean ±SD)	6.7±2.9	6.8±3.4	0.88
Charlson comorbidity index (mean ±SD)	3.6±2.3	3.9±2.2	0.47
APACHE 2 score	19.9 ±8.5	18.1±5.7	0.35
(mean ±SD)	(n=24)	(n=31)	
Clinical outcome			
Complete response/cure	11 (30.6)	16 (33.3)	0.55
Partial response/improvement	16 (44.4)	16 (33.3)	
No response/failure	9 (25)	16 (33.3)	
Microbiological outcome			0.06
Eradication present	20 (55.6)	36 (75.0)	
14-day survival	20 (55.6)	26 (54.2)	0.81
Infection related mortality	24 (66.7)	39 (81.3)	0.27

Parameter	P value	HR (95% CI)
Age	0.06	1.02 (1-1.04)
Sex	0.87	0.97 (0.95-0.96)
Hypotension	**0.019**	1.3 (1.1-1.42)
Urinary catheter	0.32	1.1 (0.96-1.31)
Mechanical ventilation	0.73	1.2 (0.94-1.4)
IV Catheter	0.81	1.2 (0.98- 1.3)
Hemodialysis	0.059	1.1 (0.95-1.3)
Presence of another concomitant infection	0.43	1.2 (1.1-1.32)
Pitt Bacteremia score	0.08	1.1 (0.99-1.22)
Charlson comorbidity index	**0.05**	1.2 (1.0-1.3)
Pre-MDR-AB Hospital stay	**0.018**	0.97 (0.95-0.96)
Pre-MDR-AB ICU stay	**0.026**	0.96 (0.95-1.00)
APACHE 2 score	**0.0001**	1.14 (1.06-1.23)

Use of high-dose IV and aerosolized colistin for the treatment of multidrug-resistant *Acinetobacter baumannii* ventilator-associated pneumonia: do we really need this treatment?

Gamze Kalin · Emine Alp · Ramazan Coskun · Hayati Demiraslan · Kürsat Gündogan · Mehmet Doganay

J Infect Chemother (2012) 18:872–877

	High-dose ($n = 15$) n (%)	Normal-dose ($n = 20$) n (%)	Low-dose ($n = 10$) n (%)	p value
Age in years (mean ± SD)	48.07 ± 24.86	53.75 ± 17.86	45.70 ± 18.89	0.55
APACHE II score (median)	22	22	22	0.92
Male	9 (60)	16 (80)	7 (70)	0.44
Diabetes mellitus	2 (13)	1 (5)	2 (20)	0.59
Chronic liver failure	0 (0)	1 (5)	0 (0)	1.00
Congestive cardiac failure	0 (0)	0 (0)	0 (0)	–
Chronic obstructive lung disease	2 (13)	7 (35)	1 (10)	0.22
Malignancy	0 (0)	2 (10)	1 (10)	0.59
Chemotherapy	0 (0)	1 (5)	1 (10)	0.70
Steroid	5 (33)	9 (45)	3 (30)	0.79
Trauma	5 (33)	8 (40)	1 (10)	0.27
Smoking	5 (33)	9 (45)	5 (50)	0.79
Sepsis	1 (7)	5 (25)	0 (0)	0.34
Severe sepsis	11 (73)	11 (55)	7 (70)	
Septic shock	3 (20)	4 (20)	3 (30)	
Multi-organ failure	0 (0)	0 (0)	0 (0)	
Previous antibiotic use	15 (100)	20 (100)	10 (100)	–
Another infection site	13 (87)	19 (95)	10 (100)	0.45
Concomitant glycopeptide use	8 (53)	7 (35)	5 (50)	0.55
Concomitant aminoglycoside use	5 (33)	5 (25)	3 (30)	0.91
Hospital admission before ICU admission	6 (40)	11 (55)	6 (60)	0.59

Standart 2*2.5mg/kg (max 300 mg)
Yüksek doz 4*2.5 mg/kg (max 600 mg)
İnhale:2*75 mg

Use of high-dose IV and aerosolized colistin for the treatment of multidrug-resistant *Acinetobacter baumannii* ventilator-associated pneumonia: do we really need this treatment?

Gamze Kalin · Emine Alp · Ramazan Coskun · Hayati Demiraslan · Kürsat Gündogan · Mehmet Doganay

J Infect Chemother (2012) 18:872–877

	High-dose ($n = 15$) n (%)	Normal-dose ($n = 20$) n (%)	Low-dose ($n = 10$) n (%)	p value
On the 5th day of COL therapy				
Good response	4 (27)	10 (50)	3 (30)	0.45
Poor response	11 (73)	10 (50)	7 (70)	
On the 14th day of COL therapy				
Clinical cure	1 (7)	6 (30)	3 (30)	0.25
Clinical failure	14 (93)	14 (70)	7 (70)	
Bacteriological clearance	9 (64)	13 (65)	6 (75)	0.19
Bacteriological failure	5 (36)	7 (35)	2 (25)	
Presence of fever (median, days)	11 (73)	5 (25)	5 (50)	0.01
Nephrotoxicity	6 (40)	7 (35)	2 (20)	0.66
Length of ICU stay (mean ± SD, days)	33 ± 39.87	34 ± 34.97	42 ± 32.24	0.25
Mortality	10 (67)	9 (45)	4 (40)	0.18

Application of a Loading Dose of Colistin Methanesulfonate in Critically Ill Patients: Population Pharmacokinetics, Protein Binding, and Prediction of Bacterial Kill

Ami F. Mohamed,[a,b] Ilias Karaiskos,[c] Diamantis Plachouras,[c] Matti Karvanen,[d] Konstantinos Pontikis,[e] Britt Jansson,[a] Evangelos Papadomichelakis,[e] Anastasia Antoniadou,[c] Helen Giamarellou,[c] Apostolos Armaganidis,[e] Otto Cars,[d] and Lena E. Friberg[a]

Antimicrob Agents Chemotherapy 2012;56:4241-4249

TABLE 1 Demographic and clinical data[a]

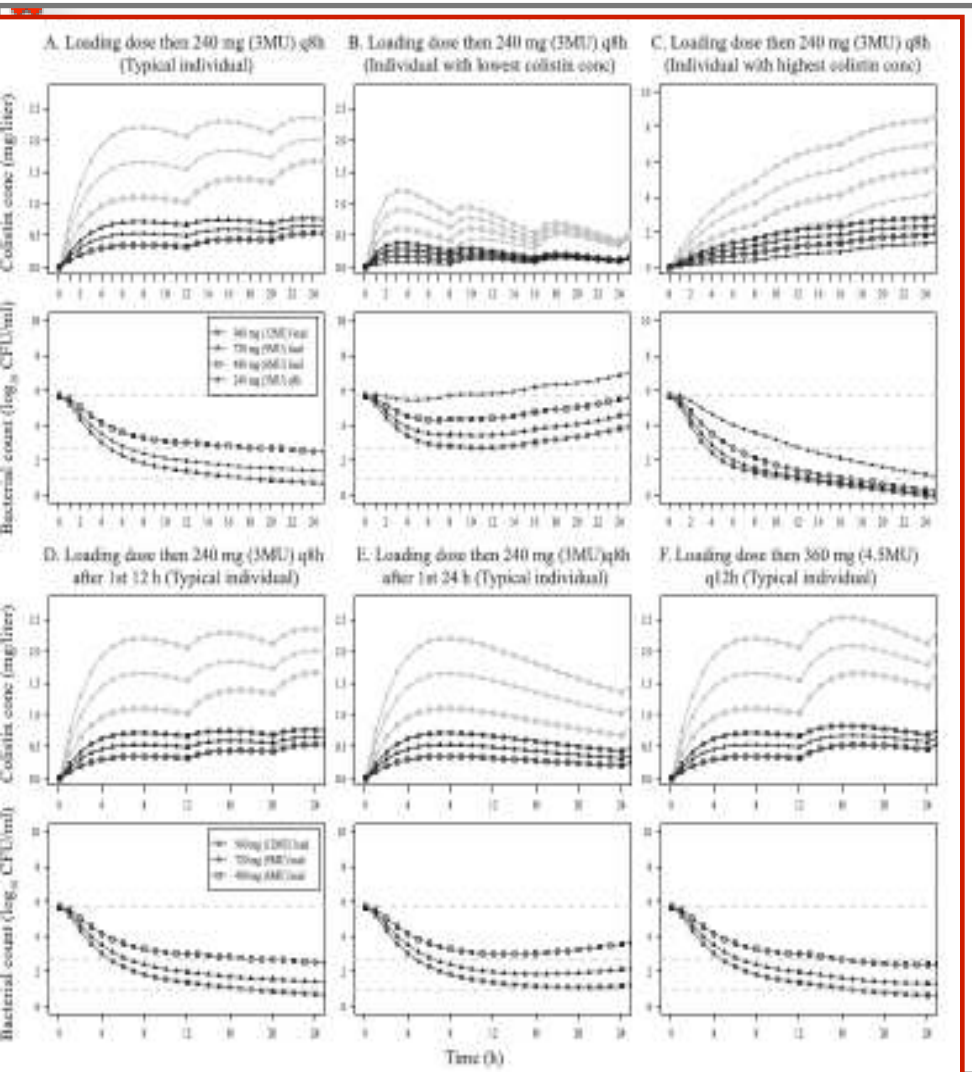
Patient no.	Gender	Age (yr)	Body wt (ideal body wt) (kg)	Total maintenance daily dose (mg [MU])	Serum creatinine concn at baseline, day 3 (mg/dl)	CrCL at baseline, day 3 (ml/min)	Serum albumin concn (g/dl)	APACHE II score	Diagnosis	Reason for colistin administration
19	M	46	80 (70)	720 (9)	1, 0.9	91.6, 101.7	2.3	8	Necrotizing fasciitis	Necrotizing fasciitis
20	F	51	60 (65)	720 (9)	0.8, 0.5	120.5, 134.8	3	17	Multiple sclerosis	VAP
21	M	59	140 (75)	720 (9)	1.1, 0.8	76.8, 105.7	2.7	9	Pneumonia	VAP
22	M	66	75 (75)	480 (6)	1.1, 0.8	70.2, 96.5	3.5	23	Cirrhosis-hepatic encephalopathy	VAP
23	M	32	80 (70)	720 (9)	0.6, 0.6	191.5, 191.5	1.9	17	Pneumonia	VAP
24	F	88	80 (70)	240 (3)	1.7, 1.7	24.9, 24.9	2.1	24	Acute mesenteric ischemia	VAP
25	M	60	85 (75)	720 (9)	1, 1	83.5, 83.5	3.2	7	Pneumonia	VAP
26	F	48	65 (65)	720 (9)	0.7, 0.5	99.5, 139.4	3.1	16	Trauma	VAP
27	M	52	80 (70)	720 (9)	0.4, 0.5	214.3, 171.4	3.8	18	NHL-pneumonia	VAP
28	F	52	65 (65)	720 (9)	0.7, 0.8	95.2, 83.3	2.5	15	H1N1 infection-pneumonia	Bacteremia

Doz: Yükleme dozu (480 mg), ardından 3*240 mg

Application of a Loading Dose of Colistin Methanesulfonate in Critically Ill Patients: Population Pharmacokinetics, Protein Binding, and Prediction of Bacterial Kill

Antimicrob Agents Chemotherapy 2012;56:4241-4249

Ami F. Mohamed,[a,b] Ilias Karaiskos,[c] Diamantis Plachouras,[c] Matti Karvanen,[d] Konstantinos Pontikis,[e] Britt Jansson,[a] Evangelos Papadomichelakis,[e] Anastasia Antoniadou,[c] Helen Giamarellou,[c] Apostolos Armaganidis,[e] Otto Cars,[d] and Lena E. Friberg[a]



- Yüksek yükleme dozlarında serbest ilaç düzeyi artıyor
- Yüksek yükleme dozlarında bakteriyi öldürme zamanı kısalıyor
- Hidrasyon ile yüksek yükleme dozu (480 mg) nefrotoksite için riski artırmıyor
- **480-720 mg yükleme doz** öneriliyor

High-Dose, Extended-Interval Colistin Administration in Critically Ill Patients: Is This the Right Dosing Strategy? A Preliminary Study

Lidia Dalfino,[1] Filomena Puntillo,[1] Adriana Mosca,[2] Rosa Monno,[2] Maria Luigia Spada,[1] Sara Coppolecchia,[1] Giuseppe Miragliotta,[2] Francesco Bruno,[1] and Nicola Brienza[1]

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may

- 25 hasta, 28 kolistin tedavisi değerlendiriliyor
- **Doz:** 9 MU (720 mg) yükleme dozu sonrası 2*4.5 MU (720 mg/ gün)
- Klinik kür 23 (%82) hastada var
- 5 (%18) hastada ABY var

Clin Infect Dis 2012;54:1720-6

Table 1. Patients' Characteristics and Clinical Features of Infectious Episodes Among 23 Infectious Episodes With and 5 Without a Favorable Response to Colistimethate Sodium Therapy

Variable	CMS Response[a]	No CMS Response
Age (years), mean ± SD	62 ± 18	76 ± 3
Charlson comorbidity index, mean ± SD	2 (1.5)	3.2 (2.2)[b]
Surgical admission, No. (%) of patients	8/20 (40)	4/5 (80)
APACHE II score, mean ± SD	18 ± 6	25 ± 7[b]
SOFA score, mean ± SD	7.6 ± 2	9.1 ± 2
ICU LOS (days)	56 (30–85)	75 (52–86)
ICU mortality, No. (%) of patients	5/20 (25)	5/5 (100)[b]
Infectious episodes, No. (%) of cases	23/28 (82.1)	5/28 (17.9)
Pseudomonas aeruginosa	1	0
Bacteriological clearance, No. (%) of cases	13/13 (100)	0/5[b]
VAP, No. (%) of cases	10/23 (43.5)	0/5
VAP-associated pathogens, No. of isolates		
Acinetobacter baumannii	5	0
Klebsiella pneumoniae	4	0
Pseudomonas aeruginosa	1	0
Bacteriological clearance, No. (%) of cases	4/10 (40)	0/5 (0)
Clinical presentation, No. (%) of cases		
Severe sepsis	16/23 (69.5)	0/5 (0)[b]
Septic shock	7/23 (30.5)	5/5 (100)[b]
Daily CMS dose (MU/d)	8.5 (7.3–9)	7.7 (5–8.5)
Cumulative CMS dose (MU/course)	91 (61–122)	105 (17–142)
CMS monotherapy, No. (%) of courses	12/23 (52.2)	2/5 (40)
CMS treatment duration (days)	11 (10–14.5)	15.5 (7–21)

COLOMYCIN® / COLISTIN

Ağır enfeksiyonlarda yüksek doz etkili

Table 2. Potential Risk Factors for Acute Kidney Injury Associated With Colistimethate Sodium Therapy

Factor	No AKI (n = 23)	AKI (n = 5)
Septic shock	10 (43.5)	2 (40)
Concomitant nephrotoxic agents	20 (86.9)	4 (80)
Antibiotics	7 (30.4)	3 (60)
Diuretics	15 (65.2)	3 (60)
Radiocontrast agents	1 (4.3)	4 (80)*
Mannitol	4 (17.4)	1 (20)
Daily CMS dose (MU/day)	8.3 (6.5–9)	7.1 (6–8.6)
CMS treatment duration (days)	11 (8.5–17.5)	12 (10–15)
Cumulative CMS dose	92 (66–126)	81 (64–92)

Monoterapi mi? Kombinasyon mu?

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

New Microbiologica, 38, 67-73, 2015

Antimicrobial efficacy of doripenem and its combinations with sulbactam, amikacin, colistin, tigecycline in experimental sepsis of carbapenem-resistant *Acinetobacter baumannii*

Gokcen Dinc[1,2], Hayati Demiraslan[3], Ferhan Elmali[4], Salman Shaheer Ahmed[2,3], Emine Alp[3], Mehmet Doganay[3]

[1]Department of Microbiology and Clinical Microbiology, Faculty of Medicine, Erciyes University, Kayseri, Turkey;
[2]Department of Molecular Microbiology, Genome and Stem Cell Centre, Erciyes University, Kayseri, Turkey;
[3]Infectious Disease and Clinical Microbiology, Faculty of Medicine, Erciyes University, Kayseri, Turkey;
[4]Biostatistics and Medical Informatics, Faculty of Medicine, Erciyes University, Kayseri, Turkey

SUMMARY

Acinetobacter baumannii is the most common species to have developed resistance to antibiotics. Due to increasing levels of drug resistance, the available therapeutic options are insufficient in *A. baumannii* infections. This study investigated the efficacy of doripenem monotherapy versus doripenem combination therapy with sulbactam, amikacin, colistin and tigecycline in experimental sepsis. A carbapenem-resistant *A. baumannii* was used to develop a sepsis model in 8-10-week-old Balb/c mice by intraperitoneal injection. Antibiotic therapies were initiated two hours after injection of bacterial suspension. Necropsy was performed at 24, 48 and 72 hours and cultures were made from heart, lung, liver and spleen samples. Bacterial loads of lung and liver were calculated as CFU/g. Combination therapies with doripenem were more effective than monotherapy at 24 and 48 hours of infection but no differences between groups were detected at 72 hours. The combination of doripenem with tigecycline and amikacin began to eradicate the bacterial load of lung and liver after 48 hours of infection, whereas doripenem+sulbactam and doripenem+colistin were started to eradication at 72 hours. The results of the study showed that combination therapies with doripenem are more effective than monotherapy and the combination of doripenem with tigecycline or amikacin has more rapid bactericidal effect than that with sulbactam or colistin.

KEY WORDS: Acinetobacter baumannii, Experimental sepsis, Antibiotic therapy.

Comparison of colistin and colistin/sulbactam for the treatment of multidrug resistant *Acinetobacter baumannii* ventilator-associated pneumonia

G. Kalin · E. Alp · A. Akin · R. Coskun · M. Doganay

Infection 2014;42:37-42

Table 1 In vitro antibiotic resistance rates of 87 *A. baumannii* strains isolated from endotracheal aspirates or bronchial lavage samples

Antibiotic agent	Resistance rate (%)
Cefepim	78
Cefoperazone-sulbactam	77
Ceftazidim	84
Cefotaxim	85
Piperacillin tazobactam	96
Ciprofloxacin	85
Amikacin	79
Gentamicin	85
Netilmicin	55
Tobramicin	84
İmipenem	91
Meropenem	94
Trimetoprim-sulfametoxazol	91
Tigecycline	25
Colistin	0

Table 2 The characteristics of patients who were treated with colistin and colistin/sulbactam

	Colistin ($n = 52$), n (%)	Colistin/sulbactam ($n = 37$), n (%)	p
Age in years (median, range)	52 (19–96)	63 (20–89)	0.10
APACHE II (median, range)	22 (14–36)	27 (18–35)	0.00
Male	36 (69.2)	18 (48.6)	0.08
Diabetes mellitus	5 (9.6)	10 (27)	0.04
Chronic renal disease	2 (3.8)	5 (13.5)	0.12
Chronic liver disease	1 (1.9)	0 (0)	1.00
Chronic cardiac disease	0 (0)	1 (2.7)	0.42
Chronic obstructive lung disease	13 (25.0)	10 (27.0)	1.00
Malignancy	4 (7.7)	5 (13.5)	0.48
Chemotherapy	2 (3.8)	2 (5.4)	1.00
Steroid	20 (38.5)	10 (27.0)	0.36
Trauma	15 (28.8)	5 (13.5)	0.12
Smoking	22 (42.3)	12 (32.4)	0.38
Severity of sepsis on diagnosis of VAP			
Sepsis	9 (17.3)	8 (21.6)	0.53
Severe sepsis	33 (63.5)	19 (51.4)	
Septic shock	10 (19.2)	10 (27.0)	
Multi organ failure	0	0	
Previous antibiotic use	52 (100)	34 (94.6)	0.17
Other infection sites	49 (94.2)	34 (91.9)	0.69
Hospital admission before ICU admission	27 (51.9)	18 (48.6)	0.83
Concomitant aminoglycoside use	15 (28.8)	2 (5.4)	0.006
Concomitant glycopeptide use	23 (44.2)	10 (27)	0.12

Comparison of colistin and colistin/sulbactam for the treatment of multidrug resistant *Acinetobacter baumannii* ventilator-associated pneumonia

G. Kalin · E. Alp · A. Akin · R. Coskun · M. Doganay

Infection 2014;42:37-42

Table 3 Clinical and microbiological evaluation of patients on colistin and colistin/sulbactam therapy

On the fifth day of therapy	Colistin ($n = 52$), n (%)	Colistin/sulbactam ($n = 37$), n (%)	p
Good response	21 (40.4)	16 (43.2)	0.84
Poor response	31 (59.6)	21 (56.8)	
On the 14th day of therapy	**Colistin ($n = 47$), n (%)**	**Colistin/sulbactam ($n = 35$), n (%)**	**p**
Clinical cure	14 (29.8)	14 (40)	0.50
Clinical failure	33 (70.2)	21 (60)	
Bacteriological clearance	34 (72.3)	30 (85.7)	0.28
Bacteriological failure	13 (27.7)	5 (14.3)	
Length of ICU stay (mean ± SD)	42.33 ± 33.03	37.73 ± 24.29	0.81
Mortality	27 (51.9)	27 (73)	0.53[a]

Comparison of colistin–carbapenem, colistin–sulbactam, and colistin plus other antibacterial agents for the treatment of extremely drug-resistant *Acinetobacter baumannii* bloodstream infections

A. Batirel • I. I. Balkan • O. Karabay • C. Agalar • S. Akalin • O. Alici • E. Alp • F. A. Altay • N. Altin • F. Arslan • T. Aslan • N. Bekiroglu • S. Cesur • A. D. Celik • M. Dogan • B. Durdu • F. Duygu • A. Engin • D. O. Engin • I. Gonen • E. Guclu • T. Guven • C. A. Hatipoglu • S. Hosoglu • M. K. Karahocagil • A. U. Kilic • B. Ormen • D. Ozdemir • S. Ozer • N. Oztoprak • N. Sezak • V. Turhan • N. Turker • H. Yilmaz

Eur J Clin Microbiol Infect Dis 2014;33:1311-22

Comparison of colistin–carbapenem, colistin–sulbactam, and colistin plus other antibacterial agents for the treatment of extremely drug-resistant *Acinetobacter baumannii* bloodstream infections

Eur J Clin Microbiol Infect Dis 2014;33:1311-22

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Table 1 Baseline demographic and clinical characteristics and outcomes of 214 patients with extremely drug-resistant *Acinetobacter* spp. bloodstream infections (XDR-ABSI) who received colistin-based combination therapy and 36 patients who received colistin monotherapy

Characteristic/variable	Colistin combination group, *n* (%)	Colistin monotherapy group, *n* (%)	*p*-Value
Total (*n*)	214	36	
Age (mean ± SD) (years)	59.1±19.6	58.3±20.5	0.81
Gender (male)	141 (65)	21 (58)	0.46
Hospital stay prior to XDR-ABSI (mean ± SD, days)	23.9±21.9	22.3±19.9	0.69
ICU stay prior to XDR-ABSI (mean ± SD, days)	19.1±19.3	18.9±20.8	0.96
Pitt bacteremia score (mean ± SD)	7.1±3.6	6.8±2.9	0.62
APACHE II score[a] (mean ± SD)	18.6±6.9	17.9±7.1	0.82
Charlson comorbidity index (mean ± SD)	3.3±2.2	3.5±2.2	0.55
Concomitant other infection	128 (59)	20 (56)	0.63
Initiation of effective therapy			0.13
Early (within 24 h)	152 (71)	21 (58.3)	
Late (after 24 h)	62 (29)	15 (41.7)	
Nephrotoxicity	36 (21.8)	9 (25)	0.88
Neurotoxicity[b]			
Present	3 (1.4)	0 (0)	
Unconscious/pharmacologic sedation	211 (98.6)	36 (100)	
Clinical outcome			0.19
Complete response/cure	99 (46.3)	11 (30.6)	
Partial response/improvement	68 (31.8)	16 (44.4)	
No response/failure	47 (22)	9 (25)	
Microbiologic outcome			0.001
Eradication present	171 (79.9)	20 (55.6)	
Redundant	43 (20.1)	16 (44.4)	
14-day survival	146 (68.2)	20 (55.5)	0.14
In-hospital crude mortality	112 (52.3)	26 (72.2)	0.03

Comparison of colistin–carbapenem, colistin–sulbactam, and colistin plus other antibacterial agents for the treatment of extremely drug-resistant *Acinetobacter baumannii* bloodstream infections

Eur J Clin Microbiol Infect Dis 2014;33:1311-22

Table 2 Demographic and clinical characteristics and outcomes of 214 patients with extremely drug-resistant *Acinetobacter* spp. bloodstream infection (XDR-ABSI), according to the three different combination treatment modalities

Characteristic/variable	Colistin–carbapenem group, *n* (%)	Colistin–sulbactam group, *n* (%)	Colistinplusother agent group, *n* (%)	*p*-Value
Total, *n*	102	69	43	
Age (mean ± SD) (years)	58.94±19.8	58.2±20	60.9±19.1	0.77
Gender (male)	67 (65.7)	50 (72.5)	24 (55.8)	0.19
Hospital stay p… days)				0.25
ICU stay prior… days)				0.58
Pitt bacteremi…				0.85
APACHE II s…				0.48
Charlson com…				0.62
Primary bacte…				0.28
Secondary ba…				0.3
Catheter-relat…				0.33
Concomitant …				0.17
Initiation of e…				
Early (with…				0.38
Late (after …				
Nephrotoxicity…				0.36
Neurotoxicity…				0.16
Present				
Unconscious/pharmacologic sedation	59 (57.8)	40 (58)	19 (44.2)	
Clinical outcome				0.97
Complete response/cure	50 (49)	32 (46.4)	17 (39.5)	
Partial response/improvement	28 (27.5)	23 (33.3)	17 (39.5)	
No response/failure	24 (23.5)	14 (17.4)	9 (21)	
Microbiologic outcome				0.92
Control hemoculture obtained	95 (93)	62 (90)	39 (90.7)	
Eradication present	77 (81)	49 (79)	32 (82)	
Redundant	18 (18.9)	13 (20.9)	7 (17.9)	
14-day survival	72 (70.6)	47 (68.1)	27 (62.8)	0.79
In-hospital crude mortality	56 (55)	32 (46.4)	24 (55.8)	0.44

Colistin-based combination therapy resulted in significantly higher microbiological eradication rates, relatively higher cure and 14-day survival rates, and lower in-hospital mortality compared to colistin monotherapy. CC, CS, and CO combinations for XDR-ABSI did not reveal significant differences with respect to 14-day survival and clinical or microbiological outcome before and after propensity score matching (PSM). PBS, age, and length of ICU stay were independent risk factors for 14-day mortality.

Combination antibiotic treatment versus monotherapy for multidrug-resistant, extensively drug-resistant, and pandrug-resistant *Acinetobacter* infections: a systematic review

P. Poulikakos · G. S. Tansarli · M. E. Falagas

- 12 çalışma, 1044 epizod
- Kombinasyon tedavisi: 431 epizod
- Monoterapi: 333 epizod

Eur J Clin Microbiol Infect Dis 2014;33:1675-85

Combination antibiotic treatment versus monotherapy for multidrug-resistant, extensively drug-resistant, and pandrug-resistant *Acinetobacter* infections: a systematic review

P. Poulikakos · G. S. Tansarli · M. E. Falagas

Abstract Controversy surrounds combination treatment or monotherapy against multidrug-resistant (MDR), extensively drug-resistant (XDR), and pandrug-resistant (PDR) *Acinetobacter* infections in clinical practice. We searched the PubMed and Scopus databases for studies reporting on the clinical outcomes of patients infected with MDR, XDR, and PDR *Acinetobacter* spp. with regard to the administered intravenous antibiotic treatment. Twelve studies reporting on 1,040 patients suffering from 1,044 infectious episodes of MDR *Acinetobacter* spp. were included. The overall mortality between studies varied from 28.6 to 70 %; from 25 to 100 % in the monotherapy arm and from 27 to 57.1 % in the combination arm. Combination treatment was superior to monotherapy in three studies, where carbapenem with ampicillin/sulbactam (mortality 30.8 %, $p=0.012$), carbapenem with colistin (mortality 23 %, $p=0.009$), and combinations of colistin with rifampicin, sulbactam with aminoglycosides, tigecycline with colistin and rifampicin, and tigecycline with rifampicin and amikacin (mortality 27 %, $p<0.05$) were used against MDR *Acinetobacter* spp. resistant at least to carbapenems. The benefit was not validated in the remaining studies. Clinical success varied from 42.4 to 76.9 % and microbiological eradication varied from 32.7 to 67.3 %. Adverse events referred mainly to polymixins nephrotoxicity that varied from 19 to 50 %. The emergence of resistance was noted with tigecycline regimens in off-label uses in three studies. The available data preclude a firm recommendation with regard to combination treatment or monotherapy. For the time being, combination treatment may be preferred for severely ill patients. We urge for randomized controlled trials examining the optimal treatment of infections due to MDR, XDR, and PDR *Acinetobacter* spp.

Eur J Clin Microbiol Infect Dis 2014;33:1675-85

Kolistin

- Ağır hastalığı olanlarda kombinasyon tedavisi tercih edilmeli

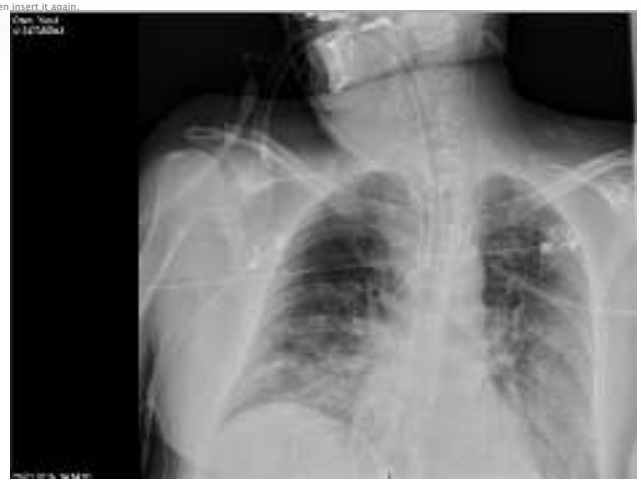
- Direnç önlenmesi için kombinasyon kullanılmalı

  - **Kolistin+rifampisin**
  - **Kolistin+sulbaktam**
  - **Kolistin+aminoglikozid**
  - **Kolistin+tigesiklin**
  - **Karbapenem+rifampisin**
  - **Karbapenem+aminoglikozid**
  - **Karbapenem+sulbaktam**

OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

25.01.2016



- Kültürleri alındı

- Hastanın tedavisine meropenem+ kolistin 300 mg/gün olarak devam edildi

- Linezolid tedavisi 8. günde kesildi

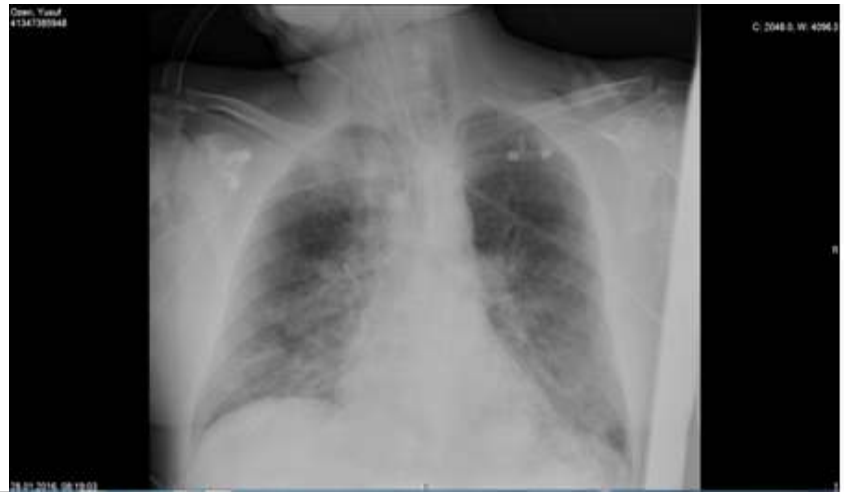
OLGU
Tedavi

25.01.2016	
Kan Kültürü	Acinetobacter baumannii H:kolistin,tigesiklin
ETA Kültürü	Acinetobacter baumannii H:kolistin,tigesiklin
İdrar Kültürü	Üreme yok

Tarih	CRP	Prokalsitonin
18.01.2016	201	0,85
25.01.2016	186	1,48
28.01.2016	**146**	**5,66**

28.01.2016

- Meropenem kesildi.
- Kolistin tedavisine sulbaktam (6 gr/gün) ve inhaler kolistin (2*75 mg) eklendi
- Ateşleri devam ediyor
- Kültürleri tekrarlandı



Use of high-dose IV and aerosolized colistin for the treatment of multidrug-resistant *Acinetobacter baumannii* ventilator-associated pneumonia: do we really need this treatment?

Gamze Kalin · Emine Alp · Ramazan Coskun · Hayati Demiraslan · Kürsat Gündogan · Mehmet Doganay

J Infect Chemother (2012) 18:872–877

	High-dose ($n = 15$) n (%)	Normal-dose ($n = 20$) n (%)	Low-dose ($n = 10$) n (%)	p value
Age in years (mean ± SD)	48.07 ± 24.86	53.75 ± 17.86	45.70 ± 18.89	0.55
APACHE II score (median)	22	22	22	0.92
Male	9 (60)	16 (80)	7 (70)	0.44
Diabetes mellitus	2 (13)	1 (5)	2 (20)	0.59
Chronic liver failure	0 (0)	1 (5)	0 (0)	1.00
Congestive cardiac failure	0 (0)	0 (0)	0 (0)	–
Chronic obstructive lung disease	2 (13)	7 (35)	1 (10)	0.22
Malignancy	0 (0)	2 (10)	1 (10)	0.59
Chemotherapy	0 (0)	1 (5)	1 (10)	0.70
Steroid	5 (33)	9 (45)	3 (30)	0.79
Trauma	5 (33)	8 (40)	1 (10)	0.27
Smoking	5 (33)	9 (45)	5 (50)	0.79
Sepsis	1 (7)	5 (25)	0 (0)	0.34
Severe sepsis	11 (73)	11 (55)	7 (70)	
Septic shock	3 (20)	4 (20)	3 (30)	
Multi-organ failure	0 (0)	0 (0)	0 (0)	
Previous antibiotic use	15 (100)	20 (100)	10 (100)	–
Another infection site	13 (87)	19 (95)	10 (100)	0.45
Concomitant glycopeptide use	8 (53)	7 (35)	5 (50)	0.55
Concomitant aminoglycoside use	5 (33)	5 (25)	3 (30)	0.91
Hospital admission before ICU admission	6 (40)	11 (55)	6 (60)	0.59

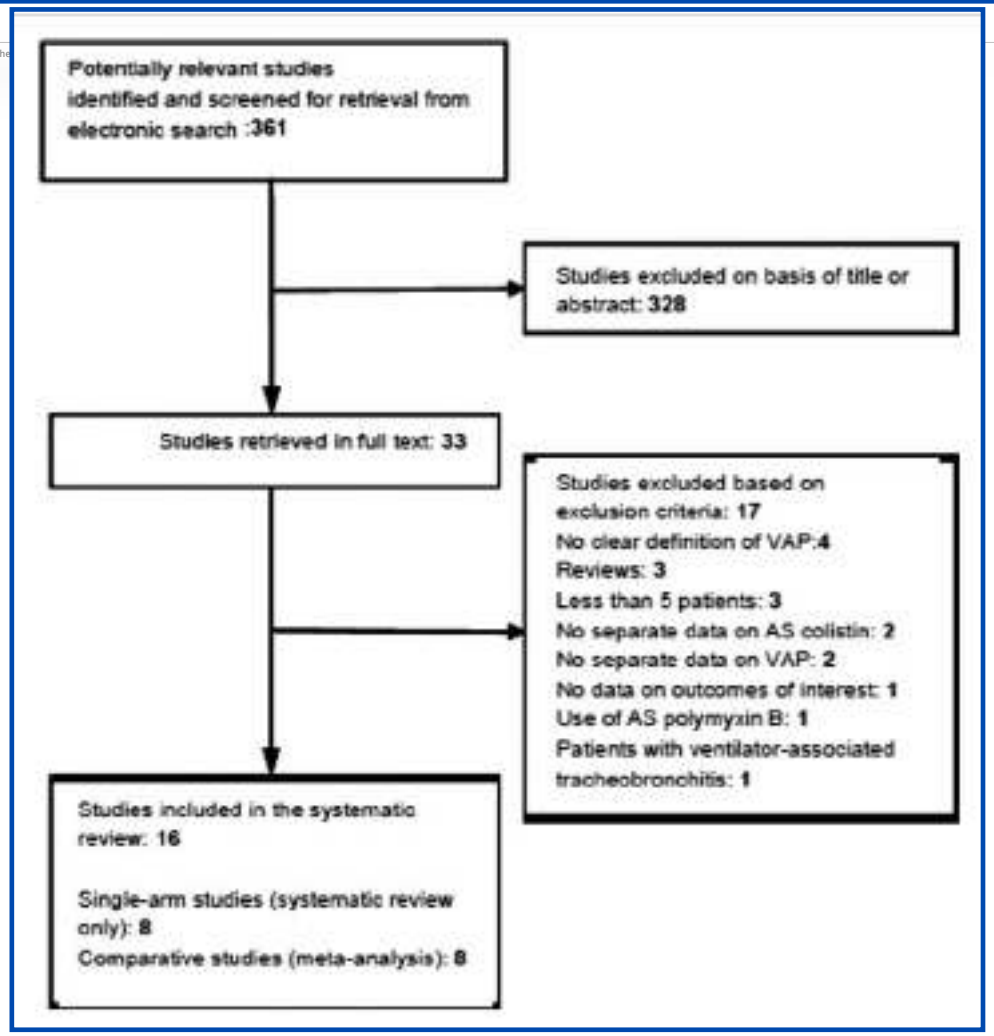
Standart 2*2.5mg/kg (max 300 mg)
Yüksek doz 4*2.5 mg/kg (max 600 mg)
İnhale:2*75 mg

The Role of Aerosolized Colistin in the Treatment of Ventilator-Associated Pneumonia: A Systematic Review and Metaanalysis*

Crit Care Med 2015;43:527-33

Antonis Valachis, MD, PhD[1]; George Samonis, MD, PhD[2]; Diamantis P. Kofteridis, MD, PhD[2]

The image cannot be displayed. Your computer may not have enough memory to open the

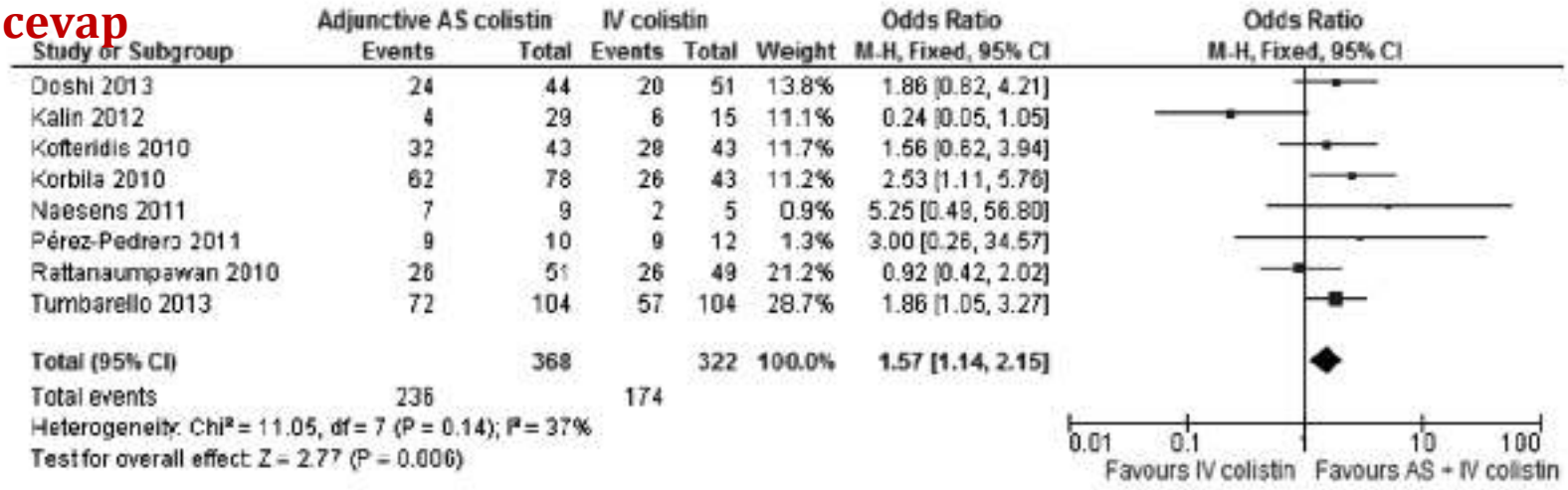


The Role of Aerosolized Colistin in the Treatment of Ventilator-Associated Pneumonia: A Systematic Review and Metaanalysis*

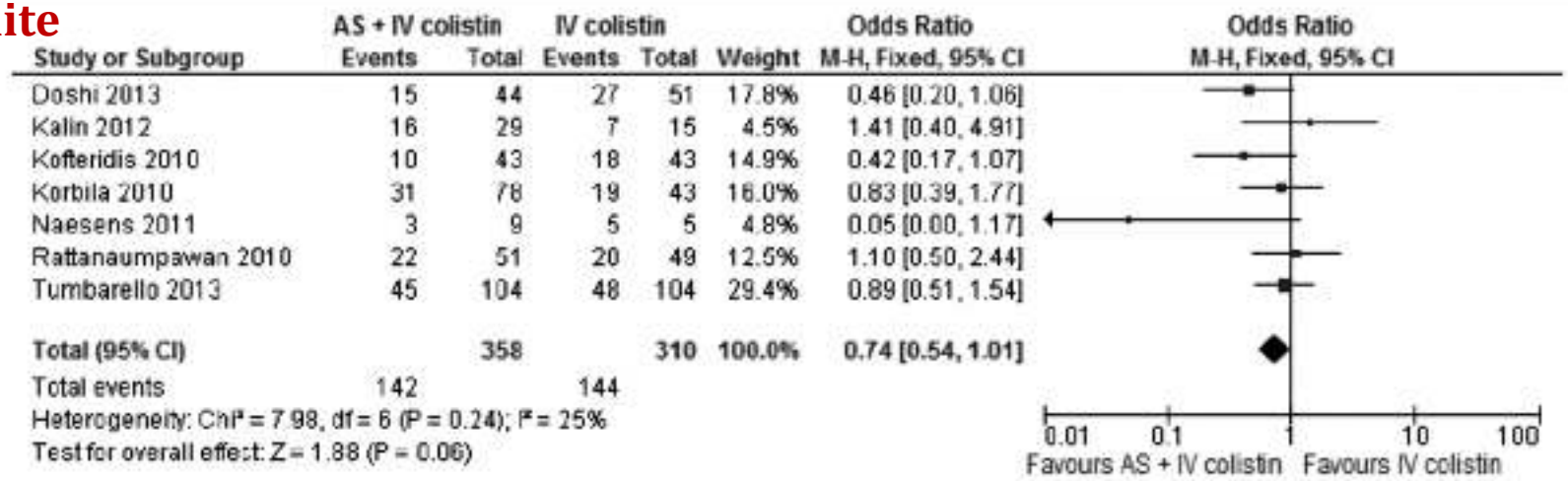
Crit Care Med 2015;43:527-33

Antonis Valachis, MD, PhD[1]; George Samonis, MD, PhD[2]; Diamantis P. Kofteridis, MD, PhD[2]

Klinik cevap



Mortalite



Eradication of multidrug-resistant *Acinetobacter baumannii* from the respiratory tract with inhaled colistin methanesulfonate: a matched case–control study

S.-C. Kuo[1,2,3], Y.-T. Lee[1], S.-P. Yang[2], C.-P. Chen[2], T.-L. Chen[1,2,4], S.-L. Hsieh[1,4], L.-K. Siu[3] and C.-P. Fung[1,2]

1) *Institute of Clinical Medicine, National Yang-Ming University, School of Medicine, Taipei, Taiwan,* 2) *Division of Infectious Diseases, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan,* 3) *Division of Infectious Diseases, National Health Research Institutes, Miaoli County, Taiwan and* 4) *Immunology Research Centre, Taipei Veterans General Hospital, Taipei, Taiwan*

- 2900 yataklı üçüncü basamak hastane
- Retrospektif çalışma
- Solunum sekresyonunda (en az 2 kültürde) MDR Ab üreyen hastalar çalışmaya dahil edilmiş
- Hastalara sıkı temas izolasyonu uygulanmış
- Solunum sekresyonunda 3 negatif ardışık kültürden sonra izolasyona son verilmiş
- **Vaka grubu:** En az 3 gün inhaler kolistin **(2x2 MU)** uygulanan hastalar
- **Kontrol grubu:** İnhaler kolistin almayan hastalar. Yaş (±5 yıl) ve APACHE II skoru (±4 puan) benzer hastalar

Clin Microbiol Infect 2012;18:870-6.

Eradication of multidrug-resistant *Acinetobacter baumannii* from the respiratory tract with inhaled colistin methanesulfonate: a matched case–control study

S.-C. Kuo[1,2,3], Y.-T. Lee[1], S.-P. Yang[2], C.-P. Chen[2], T.-L. Chen[1,2,4], S.-L. Hsieh[1,4], L.-K. Siu[3] and C.-P. Fung[1,2]

1) *Institute of Clinical Medicine, National Yang-Ming University, School of Medicine, Taipei, Taiwan, 2) Division of Infectious Diseases, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, 3) Division of Infectious Diseases, National Health Research Institutes, Miaoli County, Taiwan and 4) Immunology Research Centre, Taipei Veterans General Hospital, Taipei, Taiwan*

- Hastalardan her 3-5 günde bir solunum sekresyonu kültürü alınmış

- **Erken eradikasyon:** En az iki ardışık kültürde üreme olmaması ve 14 gün içinde alınan kültürlerde üreme olmaması

- **Persistan izolasyon:** Erken eradikasyon olmayan hastalarda 28. günde alınan kültürlerde üremenin devam etmesi

Clin Microbiol Infect 2012;18:870-6.

Eradication of multidrug-resistant *Acinetobacter baumannii* from the respiratory tract with inhaled colistin methanesulfonate: a matched case–control study

S.-C. Kuo[1,2,3], Y.-T. Lee[1], S.-P. Yang[2], C.-P. Chen[2], T.-L. Chen[1,2,4], S.-L. Hsieh[1,4], L.-K. Siu[3] and C.-P. Fung[1,2]

1) *Institute of Clinical Medicine, National Yang-Ming University, School of Medicine, Taipei, Taiwan, 2) Division of Infectious Diseases, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, 3) Division of Infectious Diseases, National Health Research Institutes, Miaoli County, Taiwan and 4) Immunology Research Centre, Taipei Veterans General Hospital, Taipei, Taiwan*

- Çalışma süresince 1020 hastanın solunum sekresyonundan MDR Abc izole edilmiş
- 291 hastada monomikrobiyal üreme ve ≥14 gün hastanede yatış
- 49 hasta ≥3 gün inhaler kolistin almış ve beraberinde iv kolistin almamış
- 10 hastada *Acinetobacter* spp. ürediği için çalışmaya alınmamış
- 39 hasta çalışmaya dahil edilmiş, 39 kontrol grup seçilmiş
- İnhaler kolistin kullanım süresi 10.9±3.6 gün

Clin Microbiol Infect 2012;18:870-6.

Eradication of multidrug-resistant *Acinetobacter baumannii* from the respiratory tract with inhaled colistin methanesulfonate: a matched case–control study

S.-C. Kuo[1,2,3], Y.-T. Lee[1], S.-P. Yang[2], C.-P. Chen[2], T.-L. Chen[1,2,4], S.-L. Hsieh[1,4], L.-K. Siu[3] and C.-P. Fung[1,2]

1) *Institute of Clinical Medicine, National Yang-Ming University, School of Medicine, Taipei, Taiwan,* 2) *Division of Infectious Diseases, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan,* 3) *Division of Infectious Diseases, National Health Research Institutes, Miaoli County, Taiwan and* 4) *Immunology Research Centre, Taipei Veterans General Hospital, Taipei, Taiwan*

The image cannot be displayed. Your computer may not have

TABLE 1. Characteristics of the study patients[a]

Characteristics	Case (n = 39)	Control (n = 39)	p
Age, mean years ± SD	78 ± 13.1	81.3 ± 10.2	0.227
Sex, male	34 (87.2)	26 (66.7)	0.032
APACHE II score at index day[b], mean ± SD	20.0 ± 6.2	21.1 ± 4.5	0.349
APACHE II score at day 14 after index day, mean ± SD	20.4 ± 6.4	20.5 ± 4.9	0.943
Colonization	23 (59.0)	27 (69.2)	0.345
Pneumonia	16 (41.0)	12 (30.8)	0.345
Stay in intensive care unit	28 (71.8)	33 (84.6)	0.170
Hospitalization day prior to index day, mean days ± SD	62.8 ± 135.9	43.5 ± 130.0	0.523

[a]Data are presented as number (%) of patients, unless stated otherwise.
[b]Index day was defined as the first day when the multi-drug resistant *Acinetobacter baumannii* was isolated from respiratory secretion.

Clin Microbiol Infect 2012;18:870-6.

Eradication of multidrug-resistant *Acinetobacter baumannii* from the respiratory tract with inhaled colistin methanesulfonate: a matched case–control study

S.-C. Kuo[1,2,3], Y.-T. Lee[1], S.-P. Yang[2], C.-P. Chen[2], T.-L. Chen[1,2,4], S.-L. Hsieh[1,4], L.-K. Siu[3] and C.-P. Fung[1,2]

1) *Institute of Clinical Medicine, National Yang-Ming University, School of Medicine, Taipei, Taiwan,* 2) *Division of Infectious Diseases, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan,* 3) *Division of Infectious Diseases, National Health Research Institutes, Miaoli County, Taiwan and* 4) *Immunology Research Centre, Taipei Veterans General Hospital, Taipei, Taiwan*

Clin Microbiol Infect 2012;18:870-6.

TABLE 2. Predisposing factors and invasive procedures use of study patients[a]

Characteristics	Case (n = 39)	Control (n = 39)	p
Predisposing factors[b]			
Chronic renal disease	23 (59.0)	19 (48.7)	0.364
Bed-ridden	22 (56.4)	21 (53.8)	0.820
Hypertension	16 (41.0)	18 (46.2)	0.648
Diabetes mellitus	15 (38.5)	11 (28.2)	0.337
Chronic lung diseases	14 (35.9)	16 (41.0)	0.642
Cerebrovascular diseases	13 (33.3)	11 (28.2)	0.624
Congestive heart failure	12 (30.8)	11 (28.2)	0.804
Coronary artery disease	12 (30.8)	6 (15.4)	0.107
Steroid use	11 (28.2)	19 (48.7)	0.063
Solid organ tumor	9 (23.1)	6 (15.4)	0.389
Major operation	6 (15.4)	2 (5.1)	0.135
Collagen disease	4 (10.3)	3 (7.7)	0.692
Renal replacement therapy	3 (7.7)	3 (7.7)	>0.99
Liver cirrhosis	3 (7.7)	1 (2.6)	0.305
Chemotherapy	2 (5.1)	1 (2.6)	0.556
PAOD	2 (5.1)	0 (0)	0.152
Trauma	1 (2.6)	2 (5.1)	0.556
Invasive procedures use			
Nasogastric tube	36 (92.3)	38 (97.4)	0.305
Foley catheter	23 (59.0)	30 (76.9)	0.089
Mechanical ventilation	15 (38.5)	23 (59.0)	0.070
Duration of mechanical ventilation prior to index day, mean days ± SD	5.7 ± 6.7	7.9 ± 6.6	0.137
Central venous catheterization	13 (33.3)	16 (41.0)	0.482
Tracheostomy	10 (25.6)	10 (25.6)	>0.99
Arterial catheterization	5 (12.8)	11 (28.2)	0.092
Abdominal drainage	1 (2.6)	0 (0)	0.314
Total parental nutrition	0 (0)	2 (5.1)	0.152
Previous intravenous antibiotic use	38 (97.4)	31(79.5)	0.013
Carbapenems	18 (46.2)	7 (17.9)	0.008
Sulbactam or ampicillin/sulbactam	9 (23.1)	5 (12.8)	0.238
Tigecycline	9 (23.1)	2 (5.1)	0.023
Anti-pseudomonas beta-lactams	24 (61.5)	23 (59.0)	0.817
Ciprofloxacin or levofloxacin	9 (23.1)	10 (25.6)	0.792
Aminoglycosides	2 (5.1)	2 (5.1)	>0.99
Concomitant intravenous antibiotic use	32 (82.1)	31 (79.5)	0.774
Carbapenems	18 (46.2)	6 (15.4)	0.003
Sulbactam or ampicillin/sulbactam	11 (28.2)	12 (30.8)	0.804
Tigecycline	10 (25.6)	8 (20.5)	0.591
Anti-pseudomonas beta-lactams	9 (23.1)	16 (41.0)	0.089
Ciprofloxacin or levofloxacin	2 (5.1)	9 (23.1)	0.023
Aztreonam	1 (2.6)	0 (0)	0.314
Aminoglycosides	1 (2.6)	0 (0)	0.314

TABLE 3. Outcomes and adverse effects of patients in the case and control groups[a]

Characteristics	Case (n = 39)	Control (n = 39)	p
Microbiological outcome			
Eradication within 14 days	33 (84.6)	4 (10.3)	<0.001
Recurrence/recolonization	7/33 (21.2)	0/4 (0)	0.570
Persistent isolation	3/6 (50)	20/35 (57.1)	>0.99
Change of colistin MIC between the last isolate and the index isolate from the same patient			
1–2-fold increase	8/28 (28.6)[b]	4/30 (13.3)[b]	0.152
Cumulative adverse effects at day 14 after index day			
Hemodynamic instability	4 (10.3)	4 (10.3)	>0.99
Acute renal failure	6/36 (16.7)	7/36 (19.4)	0.759
Need for renal replacement therapy	2/36 (5.6)	2/36 (5.6)	>0.99
Need for intubation	4/24 (16.7)	2/16 (12.5)	0.718
Cumulative adverse effects at day 28 after index day			
Hemodynamic instability	7 (17.9)	5 (12.8)	0.530
Acute renal failure	11/36 (30.6)	9/36 (25.0)	0.599
Need for renal replacement therapy	3/36 (8.3)	2/36 (5.6)	0.643
Need for intubation	5/24 (20.8)	3/16 (18.8)	0.872
Clinical outcome			
28-day mortality	5 (12.8)	4 (10.3)	0.723
In-hospital mortality	16 (41.0)	13 (33.3)	0.482

Eradication of multidrug-resistant *Acinetobacter baumannii* from the respiratory tract with inhaled colistin methanesulfonate: a matched case–control study

S.-C. Kuo[1,2,3], Y.-T. Lee[1], S.-P. Yang[2], C.-P. Chen[2], T.-L. Chen[1,2,4], S.-L. Hsieh[1,4], L.-K. Siu[3] and C.-P. Fung[1,2]

1) *Institute of Clinical Medicine, National Yang-Ming University, School of Medicine, Taipei, Taiwan,* 2) *Division of Infectious Diseases, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan,* 3) *Division of Infectious Diseases, National Health Research Institutes, Miaoli County, Taiwan and* 4) *Immunology Research Centre, Taipei Veterans General Hospital, Taipei, Taiwan*

The image cannot be displayed. Your computer may not have

TABLE 4. Factors associated with the early eradication of multidrug-resistant *Acinetobacter baumannii*[a]

Variables	Successful eradication (n = 37)	No eradication (n = 41)	p	Multivariate OR (95% CI)	p
Age, mean years ± SD	76.3 ± 14.0	82.7 ± 8.4	0.018		0.465
Chronic lung disease	9 (24.3)	21 (51.2)	0.015		0.090
Steroid use	10 (27.0)	20 (48.8)	0.049		0.925
Use of arterial catheterization	4 (10.8)	12 (29.3)	0.044		0.805
Use of nasogastric tube	33 (89.2)	41 (100)	0.031		>0.99
Duration of mechanical ventilator use prior to index day, mean days ± SD	4.84 ± 6.25	8.56 ± 6.65	0.013		0.114
Previous use of carbapenem	17 (45.9)	8 (19.5)	0.012		0.612
Previous use of tigecycline	9 (24.3)	2 (4.9)	0.014		0.971
Concomitant use of ciprofloxacin or levofloxacin	0 (0)	11 (26.8)	<0.001		>0.99
CMS inhalation	33 (89.2)	6 (14.6)	<0.001	266.33 (11.26–6302.18)	<0.001

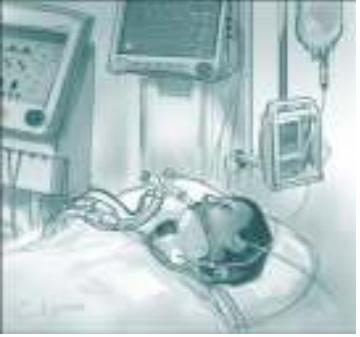
Clin Microbiol Infect 2012;18:870-6.

OLGU
Tedavi

30.01.2015

- Kolistin tedavisinin 6. günü
- Ateşleri devam ediyor
- Hipotansiyonu mevcut, noradrenalin başlandı
- Kültürleri tekrarlandı

  - TPN
  - Santral katater varlığı
  - Geniş spektrumlu antibiyotik kullanımı öyküsü
  - Septik tabloda olması nedeniyle fungemi ön tanısı ile anidulafungin eklendi



OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

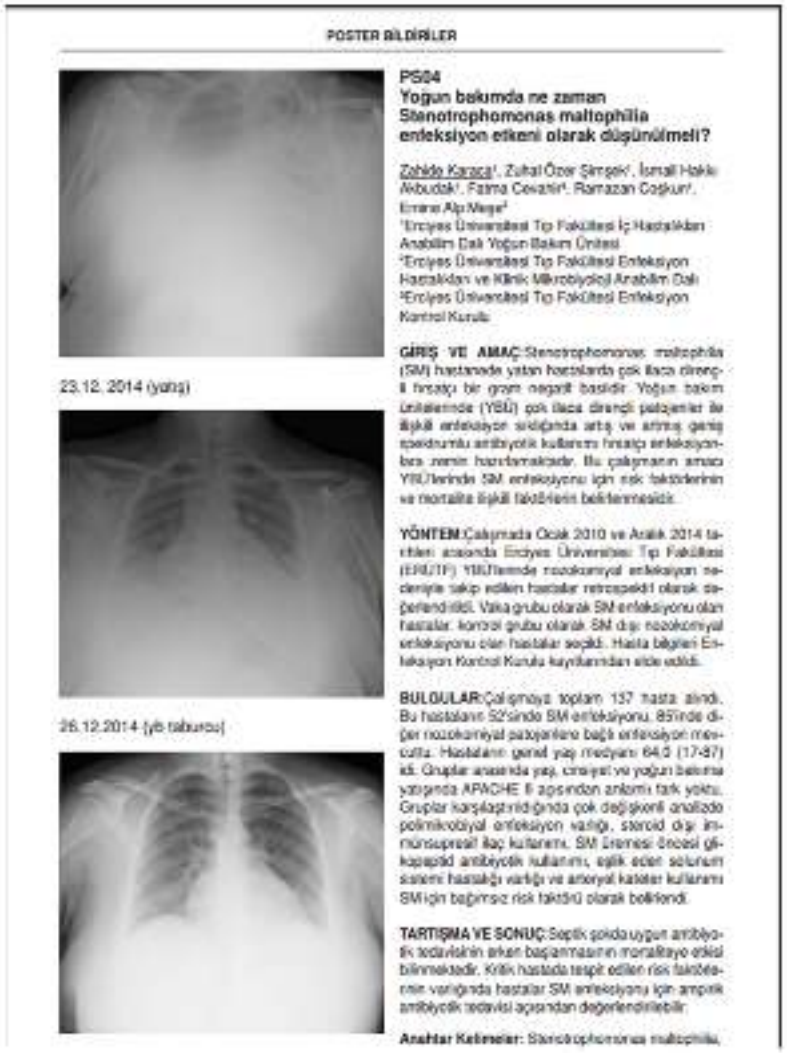
01.02.2016

28.01.2016	
Kan Kültürü	*Stenotrophomonas maltophilia*
ETA Kültürü	Üreme yok
İdrar Kültürü	Üreme yok

- Antifungal tedavisi kesilerek, TMP-SMX tedaviye eklendi

- Santral kateteri değiştirildi

Yoğun bakımda ne zaman *Stenotrophomonas maltophilia* enfeksiyon etkeni olarak düşünülmeli?



POSTER BİLDİRİLER

23.12.2014 (yatış)

26.12.2014 (yb tabureu)

PS04
Yoğun bakımda ne zaman Stenotrophomonas maltophilia enfeksiyon etkeni olarak düşünülmeli?

Zahide Karaca[1], Zuhal Özer Şimşek[2], İsmail Hakkı Akbudak[1], Fatma Cevahir[3], Ramazan Coşkun[1], Emine Alp Meşe[2]
[1]Erciyes Üniversitesi Tıp Fakültesi İç Hastalıkları Anabilim Dalı Yoğun Bakım Ünitesi
[2]Erciyes Üniversitesi Tıp Fakültesi Enfeksiyon Hastalıkları ve Klinik Mikrobiyoloji Anabilim Dalı
[3]Erciyes Üniversitesi Tıp Fakültesi Enfeksiyon Kontrol Kurulu

GİRİŞ VE AMAÇ: Stenotrophomonas maltophilia (SM) hastanede yatan hastalarda çok ilaca dirençli fırsatçı bir gram negatif basildir. Yoğun bakım ünitelerinde (YBÜ) çok ilaca dirençli patojenler ile ilişkili enfeksiyon sıklığında artış ve artmış geniş spektrumlu antibiyotik kullanımı fırsatçı enfeksiyonlara zemin hazırlamaktadır. Bu çalışmanın amacı YBÜ'lerinde SM enfeksiyonu için risk faktörlerinin ve mortalite ilişkili faktörlerin belirlenmesidir.

YÖNTEM: Çalışmada Ocak 2010 ve Aralık 2014 tarihleri arasında Erciyes Üniversitesi Tıp Fakültesi (ERÜTF) YBÜ'lerinde nozokomiyal enfeksiyon nedeniyle takip edilen hastalar retrospektif olarak değerlendirildi. Vaka grubu olarak SM enfeksiyonu olan hastalar, kontrol grubu olarak SM dışı nozokomiyal enfeksiyonu olan hastalar seçildi. Hasta bilgileri Enfeksiyon Kontrol Kurulu kayıtlarından elde edildi.

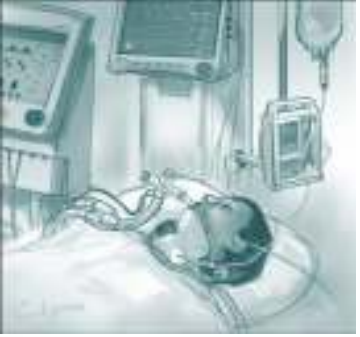
BULGULAR: Çalışmaya toplam 137 hasta alındı. Bu hastaların 52'sinde SM enfeksiyonu, 85'inde diğer nozokomiyal patojenlere bağlı enfeksiyon mevcuttu. Hastaların genel yaş medyanı 64.0 (17-87) idi. Gruplar arasında yaş, cinsiyet ve yoğun bakıma yatışında APACHE II açısından anlamlı fark yoktu. Gruplar karşılaştırıldığında çok değişkenli analizde polimikrobiyal enfeksiyon varlığı, steroid dışı immünsupresif ilaç kullanımı, SM izlemesi öncesi gelişmiştir antibiyotik kullanımı, eşlik eden solunum sistemi hastalığı varlığı ve arteryal kateter kullanımı SM için bağımsız risk faktörü olarak belirlendi.

TARTIŞMA VE SONUÇ: Septik şokta uygun antibiyotik tedavisinin erken başlanmasının mortaliteye etkisi bilinmektedir. Kritik hastada tespit edilen risk faktörlerinin varlığında hastalar SM enfeksiyonu için ampirik antibiyotik tedavisi açısından değerlendirilebilir.

Anahtar Kelimeler: Stenotrophomonas maltophilia,

Yoğun bakımda ne zaman *Stenotrophomonas maltophilia* enfeksiyon etkeni olarak düşünülmeli?

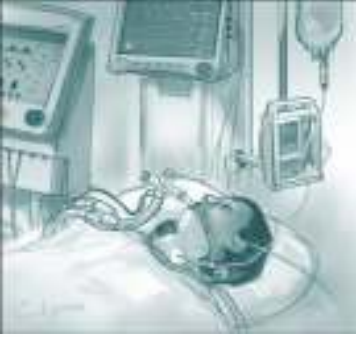
Değişken	Vaka grubu (n=52) n (%)	Kontrol grubu (n=85) n (%)	*p*	Çoklu değişken analiz RR (%95 CI)	*p*
Üreme öncesi hastanede yatış süresi	20.5 (5-106)	14 (4-198)	0.001		
Septik şok	11 (21.2)	6 (%7)	0.03		
HE (30 gün içinde)	46 (88.5)	53 (62.4)	0.001		
Polimikrobiyal enfeksiyon	30 (57.7)	8 (9.4)	0.001	9.776 (3.106-30.770)	0.001
Steroid	24 (46.2)	20 (23.5)	0.008		
İmmünosüpresif ilaç	12 (23.1)	2 (2.4)	0.001	8.492 (1.066-67.662)	0.043
Antibiyotik kullanımı (30 gün içinde	52 (100)	76 (89.4)	0.013		
Karbapenem	45 (86.5)	48 (56.5)	0.001		
Kolistin	37 (71.2)	29 (34.1)	0.001		
Kinolon	19 (36.5)	14 (16.5)	0.013		
Glikopeptid	35 (67.3)	31 (36.5)	0.001	3.287 (1.568-6.893)	0.002
Solunum yetmezliği	24 (46.2)	21 (24.7)	0.014	3.064 (1.075-8.734)	0.036
KBY	9 (17.3)	28 (32.9)	0.05		
Diyaliz	5 (9.6)	0 (0)	0.007		
Arteryal kateter	46 (88.5)	46 (54.1)	0.001	6.971 (2.603-18.672)	0.001



OLGU
Tedavi

- Takibinde ateşleri düştü
- Mekanik ventilatör ihtiyacı devam etti

Tarih	CRP	Prokalsitonin
18.01.2016	201	0,85
25.01.2016	186	1,48
28.01.2016	146	**5,66**
31.01.2016	135	**9,50**
03.02.2016	108	**5,91**
07.02.2016	86	1,53



OLGU
Tedavi

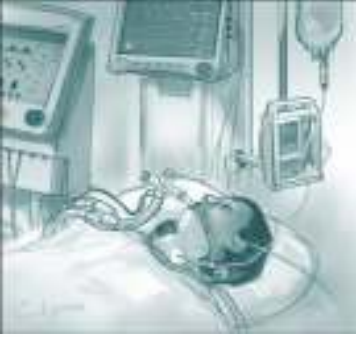
The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

08.02.2016

- Ateş yüksekliği ve taşikardisi oldu
- Kültürleri tekrarlandı
- Kolistin (15. gün)-TMP-SMX (8. gün)

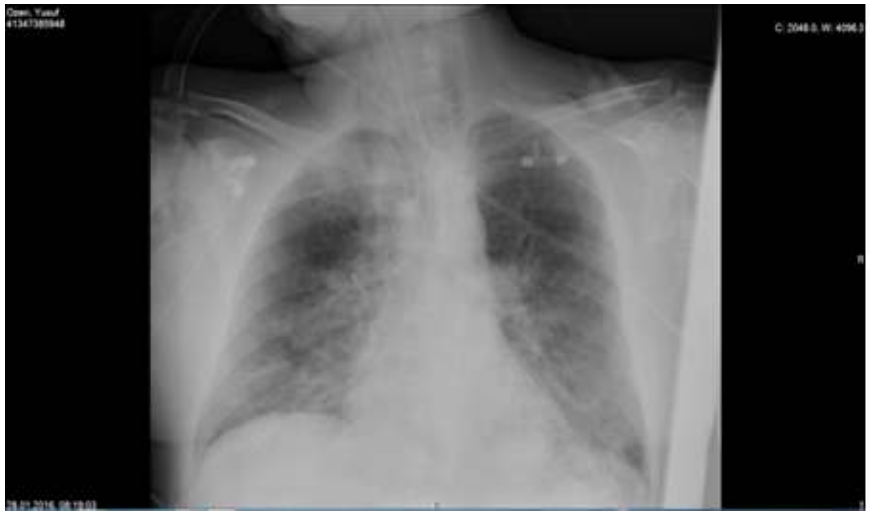
10.02.2016

- Kan kültüründe maya üremesi bildirildi
- Tedaviye anidulafungin eklendi

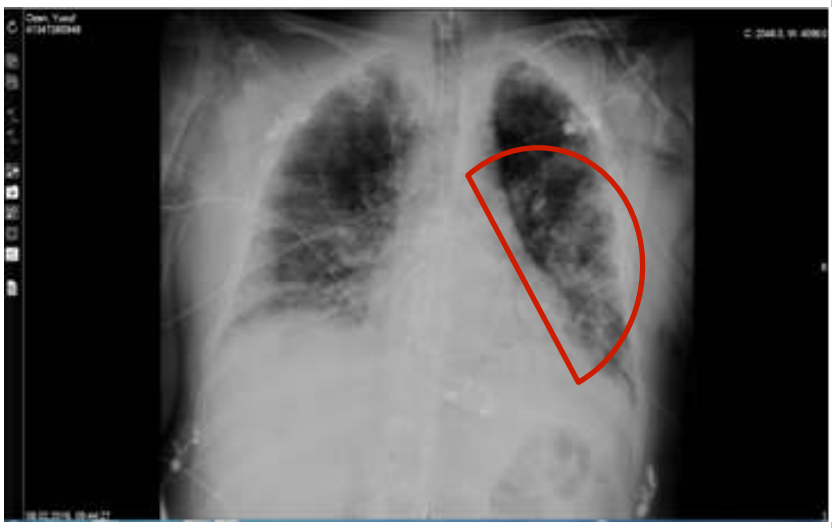


OLGU
Tedavi

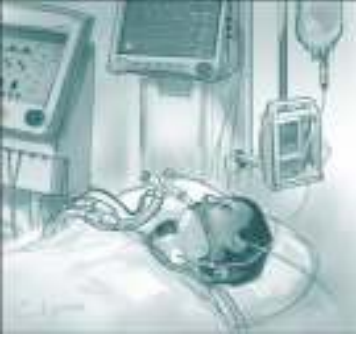
The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.



28.01.2016



10.02.2016



OLGU
Tedavi

15.02.2016

- Ateşleri devam etmesi üzerine tekrarlanan kan kültüründe *A.baumannii* ve maya üremesi oldu
- Kolistin (22. gün)tedavisine tigesiklin eklendi.
- Sulbaktam tedavisi kesildi
- TMP-SMX 14. günde kesildi

Tarih	CRP	Procalcitonin
18.01	201	0,85
25.01	186	1,48
28.01	146	5,66
31.01	135	9,50
03.02	108	5,91
07.02	86	1,53
12.02		**24,3**
14.02	108	**6,02**
17.02	124	**14,05**

Tigesiklin

- Glisiklin

- MRSA
- VRE
- Acinetobacter spp.
- ESBL-üreten gram negatiflere etkin

- Organ toksisitesi düşük
- Doz ayarlaması çoğunlukla gerekmez

Diagn Microbiol Infect Dis 2013;75:331-6.

Clinical Experience with Tigecycline in the Treatment of Carbapenem-Resistant *Acinetobacter* Infections

G. METAN [1] - E. ALP [1] - O. YILDIZ [1] - D. PERCIN [2] - B. AYGEN [1] - B. SUMERKAN [2]

- 1 June 2008-1 May 2009
- Tigesiklin alan 21 hasta değerlendirildi
- %81 tedavi başarısı

J Chemother 2010;22:110-114

Tigecycline in treatment of multidrug-resistant Gram-negative bacillus urinary tract infections: a systematic review

J Antimicrob 2014;69:2606-10.

K. Brust[1]*, A. Evans[2] and R. Plemmons[1]

Table 1. Case review of MDR Gram-negative bacillus UTIs treated with tigecycline[9–12]

Reference	Age (years)/sex	Comorbid conditions	Secondary sites of infection	Urinary pathogen	Tigecycline dosing	Length of tigecycline therapy (days)	Potentially active concomitant antibiotics	Development of tigecycline resistance	Clinical outcome	Microbiological outcome
Anthony et al.[9]	54/female	DM	none	*A. baumannii* (MDR)	standard	17	none	NA	positive	positive
Anthony et al.[9]	64/male	DM	none	*K. pneumoniae* (ESBL)	standard	11	none	NA	negative	positive
Cunha et al.[10]	elderly male	NA	none	*K. pneumoniae* (KPC) and *E. aerogenes* (MDR)	200 mg intravenously daily	14	none	NA	positive	positive
Orekonja et al.[11]	63/male	NA	prostatitis	*E. coli* (ESBL)	standard	14	ertapenem	NA	positive	positive
Elemam et al.[6]	70/female	NA	none	*K. pneumoniae* (KPC)	NA	10	rifampicin	yes	negative	negative
Gallagher et al.[7]	63/sex NA	NA	none	*A. baumannii* (MDR)	standard					
Gallagher et al.[7]	49/sex NA	NA	none	*A. baumannii* (MDR)	standard					
Gallagher et al.[7]	63/sex NA	NA	Yes, but not specified	*A. baumannii* (MDR)	standard					
Geerlings et al.[8]	44/male	renal transplant	prostatitis	*E. coli* (ESBL)	NA	42	none	no	positive	positive
Geerlings et al.[8]	66/female	PCKD with ESRD on HD	infected renal cysts	*E. coli* (ESBL)	NA	42	none	no	positive	positive
Krueger et al.[9]	25/female	neurogenic bladder with chronic urinary reflux	septic shock with respiratory failure and need for bilateral ureteral dilatation	*E. coli* (ESBL)	NA	11	meropenem	NA	positive	positive
Kuo et al.[10]	76/male	CKD	lumbar osteomyelitis with epidural abscess	*A. baumannii* (MDR)	standard	12	piperacillin/tazobactam, imipenem	NA	negative, but patient alive	negative
Reid et al.[11]	53/female	renal and liver transplant	pneumonia with negative sputum culture; bloodstream infection with CoNS	*A. baumannii* (MDR) and VRE	standard	14	levofloxacin, piperacillin/tazobactam	yes	initially positive then relapse with pneumonia, paraspinal abscess and lumbar osteomyelitis	positive[a]
Brust et al.[3]	53/female	DM, stage 3 CKD, nephrolithiasis	none	*K. pneumoniae* (KPC)	varying high doses	17	piperacillin/tazobactam, amikacin	no	positive	positive

11/14 klinik başarı
12/14 mikrobiyolojik başarı

In vitro activity of tigecycline in combination with various antimicrobials against multidrug resistant *Acinetobacter baumannii*

Luigi Principe[1], Silvia D'Arezzo[1], Alessandro Capone[1], Nicola Petrosillo[1] and Paolo Visca*[1,2]

Table 2: Chequerboard results obtained with tigecycline in combination with seven antibiotics in 24 *A. baumannii* isolates

	Effect (FICI value) of TIG in combination with [a]						
Study code	LVX	TZP	AMK	IPM	RIF	SAM	CS
5	**Sy (0.31)**	In (2.03)	*An (4.06)*	In (0.75)	In (0.62)	In (1.25)	In (0.62)
11	**Sy (0.31)**	In (2.03)	**Sy (0.50)**	In (0.75)	In (0.62)	In (1.50)	In (0.56)
16	**Sy (0.50)**	In (1.03)	In (0.62)	In (0.75)	In (1.06)	In (1.50)	**Sy (0.50)**
28	In (0.62)	In (2.03)	*An (8.06)*	In (0.75)	In (1.00)	In (1.50)	In (0.56)
29	In (0.75)	In (2.06)	In (0.75)	In (0.75)	In (1.00)	In (1.50)	In (1.12)
32	In (1.12)	In (2.06)	In (1.25)	In (0.75)	In (1.00)	In (1.50)	In (0.62)
50	In (0.75)	*An (8.03)*	In (0.75)	In (0.75)	In (0.75)	In (2.50)	In (0.56)[b]
62	In (1.00)	In (1.00)	In (1.00)	**Sy (0.37)**	In (0.62)	In (1.00)	In (0.62)
63	In (0.56)	In (2.03)	In (0.56)	In (0.75)	In (0.75)	In (1.25)	In (0.56)
71	In (0.75)	In (2.03)	**Sy (0.50)**	In (0.75)	In (0.56)	In (1.25)	In (0.56)
73	In (0.75)	*An (4.06)*	In (1.12)	In (1.12)	In (1.50)	In (2.50)	*An (4.25)*
75	**Sy (0.31)**	In (0.75)	In (0.62)	In (0.62)	In (0.62)	In (0.56)	**Sy (0.50)**
80	In (0.62)	*An (4.06)*	In (0.62)	**Sy (0.37)**	In (1.00)	In (1.25)	In (0.62)
82	In (0.56)	In (0.75)	In (2.12)	In (1.25)	In (0.62)	In (0.75)	In (1.25)
86	In (1.00)	*An (4.06)*	In (1.00)	In (0.75)	In (1.00)	In (1.50)	In (0.56)
RUH 134	In (1.50)[c]	*An (4.12)*	In (0.75)	In (1.50)[c]	In (1.00)	In (2.12)	In (1.06)
RUH 875	In (1.50)[c]	In (2.06)	In (2.12)	In (1.00)[c]	In (1.00)	In (2.06)	In (2.12)

In vitro synergistic activity of tigecycline in combination with colistin, levofloxacin, amikacin and imipenem against five non-susceptible strains

Ann Clin Microbiol Antimicrob 2009;8:18

Effectiveness of tigecycline-based versus colistin- based therapy for treatment of pneumonia caused by multidrug-resistant *Acinetobacter baumannii* in a critical setting: a matched cohort analysis

Yu-Chung Chuang[1,2], Chien-Yu Cheng[3], Wang-Huei Sheng[1*], Hsin-Yun Sun[1], Jann-Tay Wang[1], Yee-Chun Chen[1,4] and Shan-Chwen Chang[1,4]

BMC Infect Dis 2014;14:102

Abstract

Background: Colistin and tigecycline have both been shown good *in vitro* activity among multi-drug resistant *Acinetobacter baumannii* (MDRAB). A comparative study of colistin versus tigecycline for MDRAB pneumonia is lacking.

Methods: The study enrolled adults with MDRAB pneumonia admitted to intensive care units at a referral medical center during 2009–2010. Since there were no standardized minimum inhibitory concentration (MIC) interpretation criteria of tigecycline against *A. baumannii*, MIC of tigecycline was not routinely tested at our hospital. During the study periods, MIC of colistin was not routinely tested also. We consider both colistin and tigecycline as definite treatments of MDRAB pneumonia. Patients who received tigecycline were selected as potential controls for those who had received colistin. We performed a propensity score analysis, by considering the criteria of age, gender, underlying diseases, and disease severity, in order to match and equalize potential prognostic factors and severity in the two groups.

Results: A total of 294 adults with MDRAB pneumonia were enrolled, including 119 who received colistin and 175 who received tigecycline. We matched 84 adults who received colistin with an equal number of controls who received tigecycline. The two well matched cohorts share similar characteristics: the propensity scores are colistin: 0.37 vs. tigecycline: 0.37, ($P = .97$); baseline creatinine (1.70 vs. 1.81, $P = .50$), and the APACHE II score (21.6 vs. 22.0, $P = .99$). The tigecycline group has an excess mortality of 16.7% (60.7% vs. 44%, 95% confidence interval 0.9% – 32.4%, $P = .04$). The excess mortality of tigecycline is significant only among those with MIC >2 μg/mL (10/12 vs. 37/84, $P = .01$), but not for those with MIC ≤ 2 μg/mL (4/10 vs. 37/84, $P = .81$).

Conclusions: Our data disfavors the use of tigecycline-based treatment in treating MDRAB pneumonia when tigecycline and colistin susceptibilities are unknown, since choosing tigecycline-based treatment might result in higher mortality. The excess mortality of tigecycline-based group may be related to higher MIC of tigecycline (> 2 μg/mL). Choosing tigecycline empirically for treating MDRAB pneumonia in the critical setting should be cautious.

Keywords: *Acinetobacter baumannii*, Pneumonia, Colistin, Tigecycline, Mortality, Nephrotoxicity

High dose tigecycline in critically ill patients with severe infections due to multidrug-resistant bacteria

Gennaro De Pascale[1*], Luca Montini[1], Mariano Alberto Pennisi[1], Valentina Bernini[1], Riccardo Maviglia[1], Giuseppe Bello[1], Teresa Spanu[3], Mario Tumbarello[2] and Massimo Antonelli[1]

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

- The use of TGC at higher than standard doses is safe in critically ill patients
- The high TGC dosing regimen improves the outcome of patients with MDR Gram-negative VAP

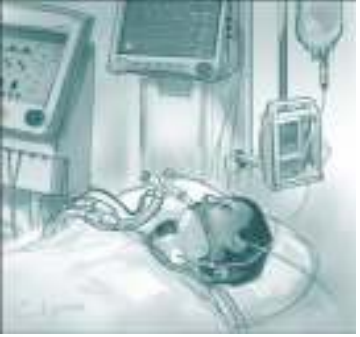
Crit Care 2014;18:R90

Effectiveness and safety of high-dose tigecycline-containing regimens for the treatment of severe bacterial infections

Matthew E. Falagas[a,b,c,*], Konstantinos Z. Vardakas[a,b], Konstantinos P. Tsiveriotis[a], Nikolaos A. Triarides[a,b], Giannoula S. Tansarli[a]

Here we review the effectiveness and safety of high-dose tigecycline (200 mg daily). A systematic search was performed in PubMed and Scopus databases as well as of abstracts presented at scientific conferences. Eight studies (263 patients; 58% critically ill) were included, comprising one randomised controlled trial (RCT), four non-randomised cohorts and three case reports. *Klebsiella pneumoniae* was the most commonly isolated pathogen (reported in seven studies). In the RCT, response in the clinically evaluable patients was 85.0% (17/20) in the 100 mg every 12 h (q12 h) group and 69.6% (16/23) in the 75 mg q12 h group ($P = 0.4$). More episodes of diarrhoea, treatment-related nausea and vomiting developed in the high-dose group (14.3% vs. 2.8%, 8.6% vs. 2.8% and 5.7% vs. 2.8%, respectively; $P > 0.05$ for all comparisons). Three (8.6%) and 7 (19.6%) patients died in the 200 mg and 150 mg daily dose groups, respectively. The cohort studies enrolled patients with severe infections, including ventilator-associated pneumonia and complicated intra-abdominal infections. Mortality with high-dose tigecycline (100 mg q12 h) in the cohort studies ranged from 8.3% to 26%; mortality in the low-dose groups (50 mg q12 h) ranged from 8% to 61% and depended on the severity of the underlying infection. There are limited available data regarding the effectiveness and safety of high-dose tigecycline. Most of the data come from critically ill patients with difficult-to-treat infections. Pharmacokinetic/pharmacodynamic properties of tigecycline suggest that high-dose regimens may be more effective than low-dose regimens. Candidates for administration of high-dose tigecycline should be also defined.

Int J Antimicrob Agents 2014;44:1-7

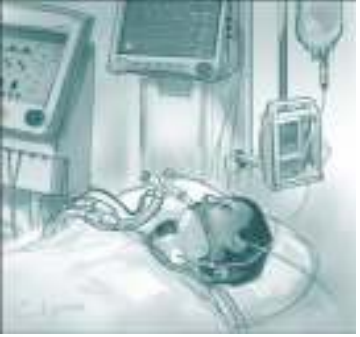


OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

19.02.2016

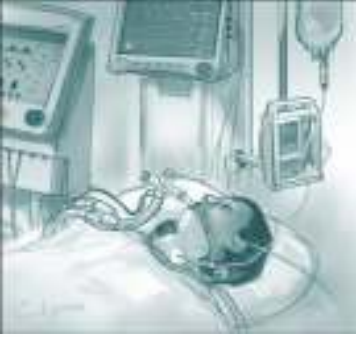
- Ateşleri devam etmesi üzerine alınan kan kültüründe gram negatif basil üremesi bildirildi
- Kolistin (26. gün), tigesiklin (5. gün), anidulafungin (9. gün) tedavisi alıyor
- Maya tiplendirilmesi *C.parapsilosis* olarak geldi
- Flukonazol (800 mg yükleme, 400 mg/gün) tedavisine geçildi



OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

- EKO: vejetasyon izlenmedi
- Santral kataterleri değiştirildi
- Toraks BT: yaygın infiltrasyon mevcut
- Batın BT: hepatosplenik kandidiyaz ve apse izlenmedi



OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

22.02.2016

Rektal sürüntü kültürü: karbapenem dirençli K. pneumoniae üredi

VRE üremedi

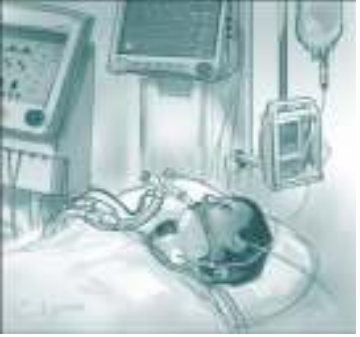
25.02.2016

- Ateşleri devam ediyor
- Kültürleri tekrarlandı

29.02.2016

- Tigesiklin (14. gün) kesilerek kolistin(iv+inh) (36. gün) tedavisine siprofloksasin (3*400 mg) eklendi

25.02.2016	
Kan Kültürü	*Acinetobacter baumannii* H: kol,tig,amikasin
ETA Kültürü	*Acinetobacter baumannii* H: kol,tig,amikasin *Pseudomonas aeroginosa* H:kol, levo,cipro
İdrar Kültürü	Üreme yok



OLGU
Tedavi

Tarih	CRP	Procalcitonin
18.01	201	0,85
25.01	186	1,48
28.01	146	5,66
31.01	135	9,50
03.02	108	5,91
07.02	86	1,53
12.02		24,3
14.02	108	6,02
17.02	124	14,05
21.02	117	1,78
25.02	120	6,64
29.02	111	1,42
07.03	45	0,32

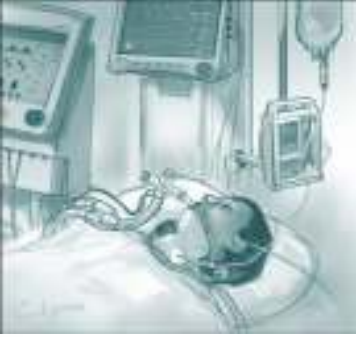
Increasing frequency of *Pseudomonas aeruginosa* infections during tigecycline use

Aysegul Ulu-Kilic[1], Emine Alp[1], Dilek Altun[2], Fatma Cevahir[2], Gamze Kalın[1], Hayati Demiraslan[1]

Table 1. Univariate and multivariate analysis of risk factors for *Pseudomonas aeruginosa* infections of ICU patients

Variables	No. (%) of patients				Univariate analysis		p	Multivariate analysis		p
	PA infection		Without PA infection		OR	(%95CI)		OR	(95%CI)	
	278	(23.8)	889	(76.2)						
Median age (range)	56.5(1-89)	-	61(1-95)	-	0.992	(0.985-0.998)	0.013			
Female gender	114	(41)	359	(40.4)	1.026	(0.780-1.350)	0.853			
Previous use of tigecycline	59	(21.2)	51	(5.7)	4.427	(2.958-6.625)	0.001	3.992	(2.625-6.071)	**0.001**
Underlying diseases										
Malignancy	28	(10.1)	77	(8.7)	1.181	(0.749-1.862)	0.474			
Hepatic failure	2	(0.7)	8	(0.9)	0.798	(0.168-3.780)	0.776			
Hypertension	44	(15.8)	206	(23.2)	0.623	(0.436-0.892)	0.010	0.686	(0.472-0.996)	**0.048**
Trauma	23	(8.3)	54	(6.1)	1.395	(0.839-2.317)	0.199			
COPD	24	(8.6)	99	(11.1)	0.754	(0.472-1.204)	0.237			
Diabetes mellitus	47	(16.9)	153	(17.2)	0.979	(0.684-1.401)	0.907			
Cardiac insufficiency	13	(4.7)	41	(4.6)	1.015	(0.536-1.922)	0.964			
Renal failure	37	(13.3)	121	(13.6)	0.974	(0.656-1447)	0.898			
Respiratory failure	120	(43.2)	311	(35)	1.412	(1.073-1.857)	0.014			
Use of steroids	23	(8.3)	91	(10.2)	0.791	(0.490-1.277)	0.337			
Invasive devices and procedures										
Surgery	88	(31.7)	244	(27.4)	1.224	(0.914- 1.640)	0.175			
Urinary catheter	250	(89.9)	785	(88.3)	1.183	(0.761-1.838)	0.455			
Mechanical ventilation	239	(86)	688	(77.4)	1.790	(1.233-2.600)	0.002			
Tracheostomy	159	(57.2)	371	(41.8)	1.866	(1.421-2.450)	0.001	1.551	(1.162-2.070)	**0.003**
CVC	201	(72.3)	553	(62.2)	1.586	(1.180-2.132)	0.002			
PVC	95	(34.2)	335	(37.7)	0.854	(0.644-1.133)	0.275			
TDC	26	(9.4)	33	(3.7)	2.676	(1.571-4.560)	0.001	2.543	(1.457-4.441)	**0.001**
Extra ventricular shunt	9	(3.2)	7	(0.8)	4.216	(1.555-11.426)	0.005	4.218	(1.499-11.870)	**0.006**
Colostomy	9	(3.2)	14	(1.6)	2.091	(0.895-4.885)	0.088			

J Infect Dev Ctries 2014;8:1361-4.

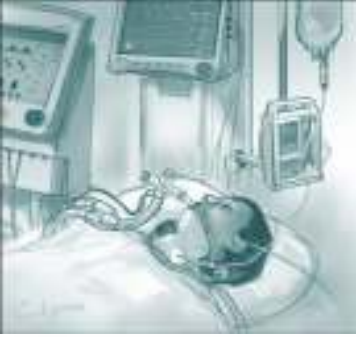


OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

09.03.2016

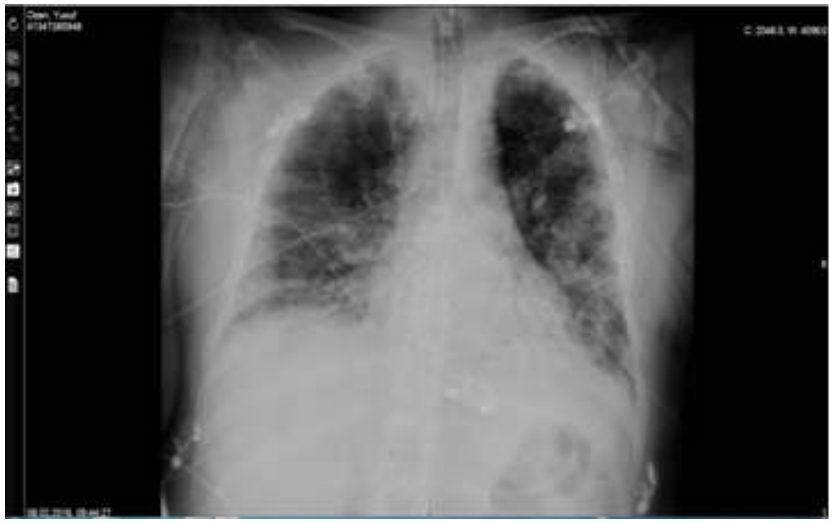
- Flukonazol (14 gün) tedavisi kesildi
- Ateş yüksekliği ile birlikte hipotansiyonu oldu
- Noradrenalin başlandı
- Kolistin (45. gün), siprofloksasin (10. gün)
- Kültürleri tekrarlanarak ampirik linezolid ve TMP-SMX eklendi
- Kateterleri değiştirilerek katater ucu kültürü gönderildi



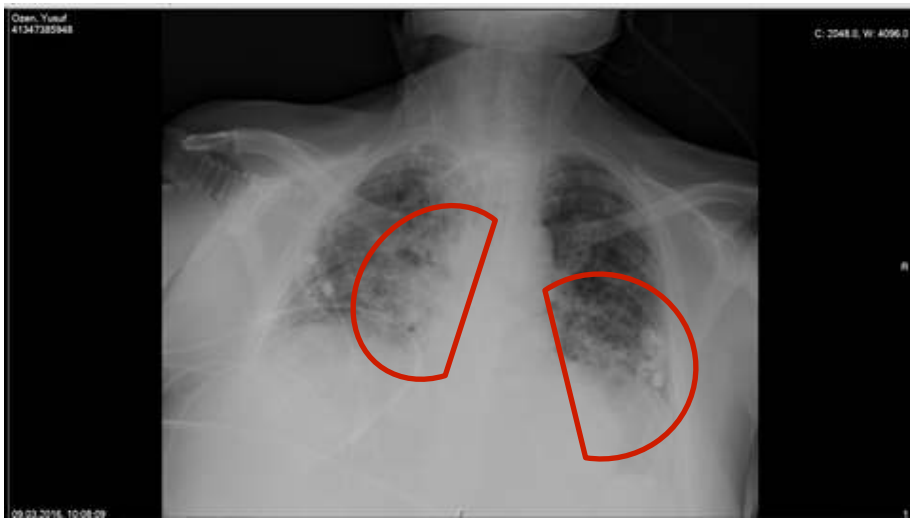
OLGU
Tedavi

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

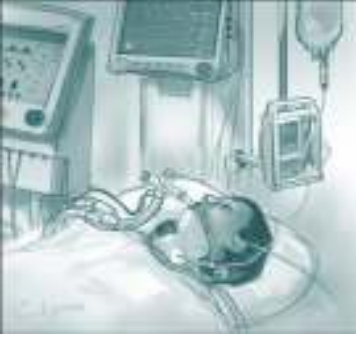
Tarih	Beyaz Küre	Neu	Hb	Plt	BUN/Cre	Na/K	AST/ALT	LDH	CRP	Procalcitonin
18.01.2016	10370	%92	13	282000	22/0,77	134/5,2	46/30	914	201	0,85
09.03.2016	**14300**	%78	7,4	147000	**59/1,17**	137/4,65	**43/71**	544	45	0,42



10.02.2016



09.03.2016



OLGU
Tedavi

- Kan kültürü: Kolistine dirençli Klebsiella pneumoniae H: tigesiklin
- Tigesiklin (200 mg yükleme, 200 mg/gün) tedaviye eklendi
- 14.03.2016 BAL karbapenem dirençli, kolistin, tigesiklin duyarlı *A.baumannii* (10^5)
- 14.03.2016: exitus

In vivo emergence of colistin resistance in *Acinetobacter baumannii* clinical isolates of sequence type 357 during colistin treatment☆,☆☆

Yoonjung Kim [a,1], Il Kwon Bae [b,1], Hyukmin Lee [d], Seok Hoon Jeong [c,*], Dongeun Yong [c], Kyungwon Lee [c]

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

ABSTRACT

This study was performed to investigate the mechanisms of in vivo acquisition of colistin resistance in *A. baumannii* during colistin treatment. Three colistin-susceptible/resistant pairs of *A. baumannii* were recovered from patients who underwent colistin treatment. All of the 6 isolates included in this study shared an identical sequence type (ST), ST375, and they showed identical *SmaI*-macrorestriction patterns by pulsed-field gel electrophoresis. The individual colistin-resistant isolates harbored distinct mutations in the *pmrB* gene. Mutations detected in the *pmrB* gene were Ala227Val, Pro233Ser, and frame shift from Phe26. In matrix-assisted laser desorption ionization–time of flight analysis, colistin-resistant isolates were different from their colistin-susceptible counterparts, and they showed additional distinct peaks at 1852 m/z, 1937 m/z, 1954 m/z, 1975 m/z, 2034 m/z, and 2157 m/z. In vivo selection of colistin-resistant *A. baumannii* occurred independently in strains of ST357 during colistin treatment, and the strains acquired colistin resistance via mutations in the *pmrB* gene resulting in modification of lipid A components.

Diagn Microbiol Infect Dis 2014;79:362-6

Kolistine Dirençli Gram Negatif Bakteri

- Erciyes Üniversitesi Hastaneleri
- 1300 yataklı
- 2008-2016 yılları
- 165 hasta
- 115 (%69.7) hasta YBÜ'de

Gundogdu A, et al. EKMUD 2016. SS-042

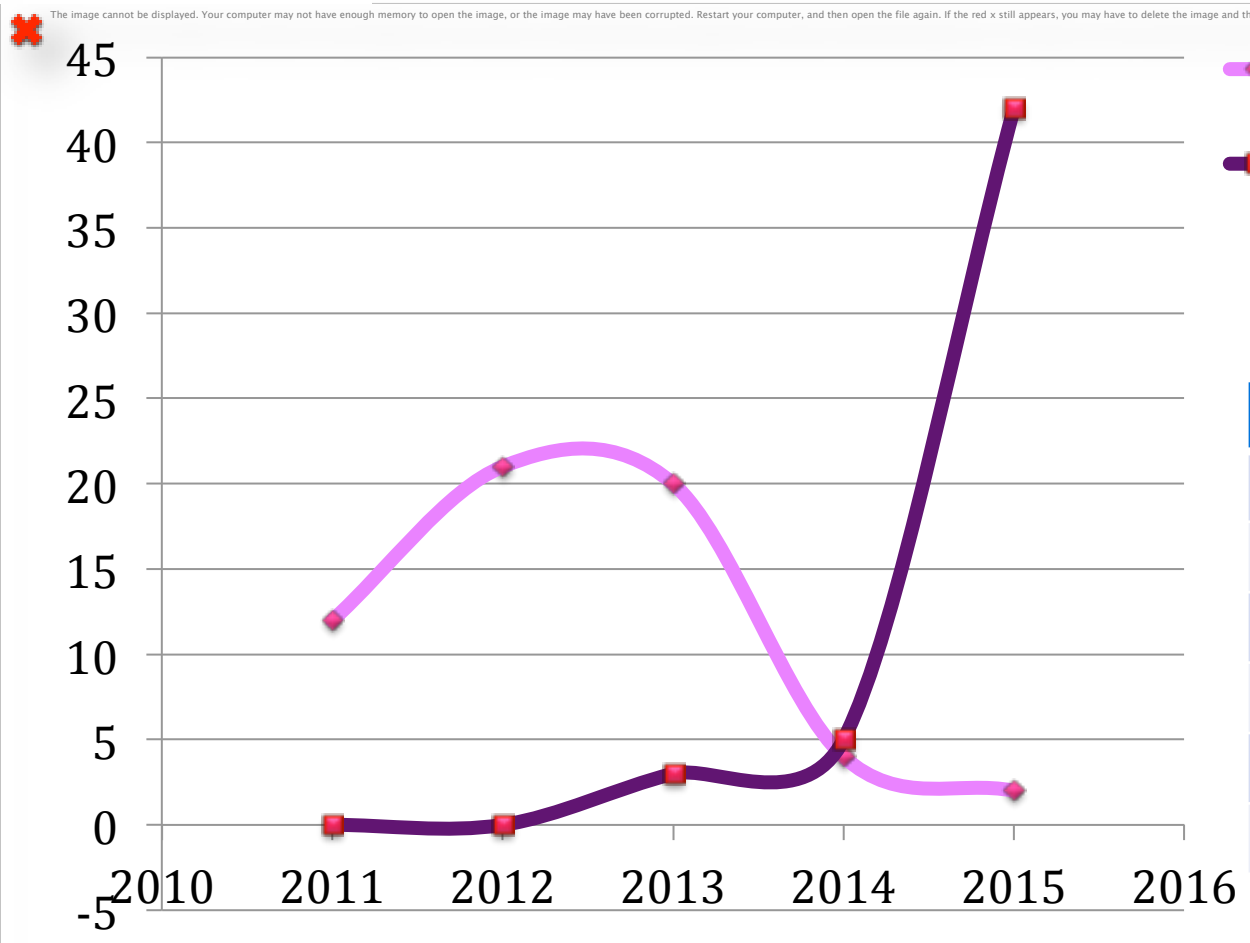
Kolistine Dirençli Gram Negatif Bakteri

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Bakteriler	n=165 (%)
Acinetobacter baumannii	91 (55.1)
Klebsiella pneumoniae	51 (30.9)
Pseudomonas aeruginosa	6 (3.6)
Acinetobacter spp.	3 (1.8)
Gram negatif basil	14 (8.48)

Gundogdu A, et al. EKMUD 2016. SS-042

Kolistine Dirençli Gram Negatif Bakteri



Bakteriler	n(%)
A.baumannii	57 (46.7)
K.pneumoniae	51 (41.8)
P. aeruginosa	5 (4.1)
Gram (-) basil	6 (4.9)
Acinetobacter spp.	3 (2.5)
Toplam	122 (100)

Kolistine Dirençli Gram Negatif Bakteri

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

	Toplam n=122	YBÜ n=88 (% 72.1)	SERVİS n=34 (% 27.8)	p
Üreme öncesi antibiyotik kullanımı	112 (91.8)	84 (95.5)	28 (82.4)	0.028
Karbapenem	65 (53.3)	52 (59.1)	13 (38.2)	0.045
Betalaktam	68 (55.7)	54 (61.4)	14(41.2)	0.066
Glikopeptid	47 (38.5)	36 (40.9)	11 (32.4)	0.415
Tigesiklin	13 (10.7)	10 (11.5)	3 (8.8)	0.758
Kolistin	53(43.4)	42 (47.7)	11 (32.4)	0.155

Colistin-Resistant *Acinetobacter baumannii*: Beyond Carbapenem Resistance

Clin Infect Dis 2015;60:1295-1303

Zubair A. Qureshi,[1] Lauren E. Hittle,[2] Jessica A. O'Hara,[1] Jesabel I. Rivera,[1] Alveena Syed,[1] Ryan K. Shields,[1] Anthony W. Pasculle,[3] Robert K. Ernst,[2] and Yohei Doi[1]

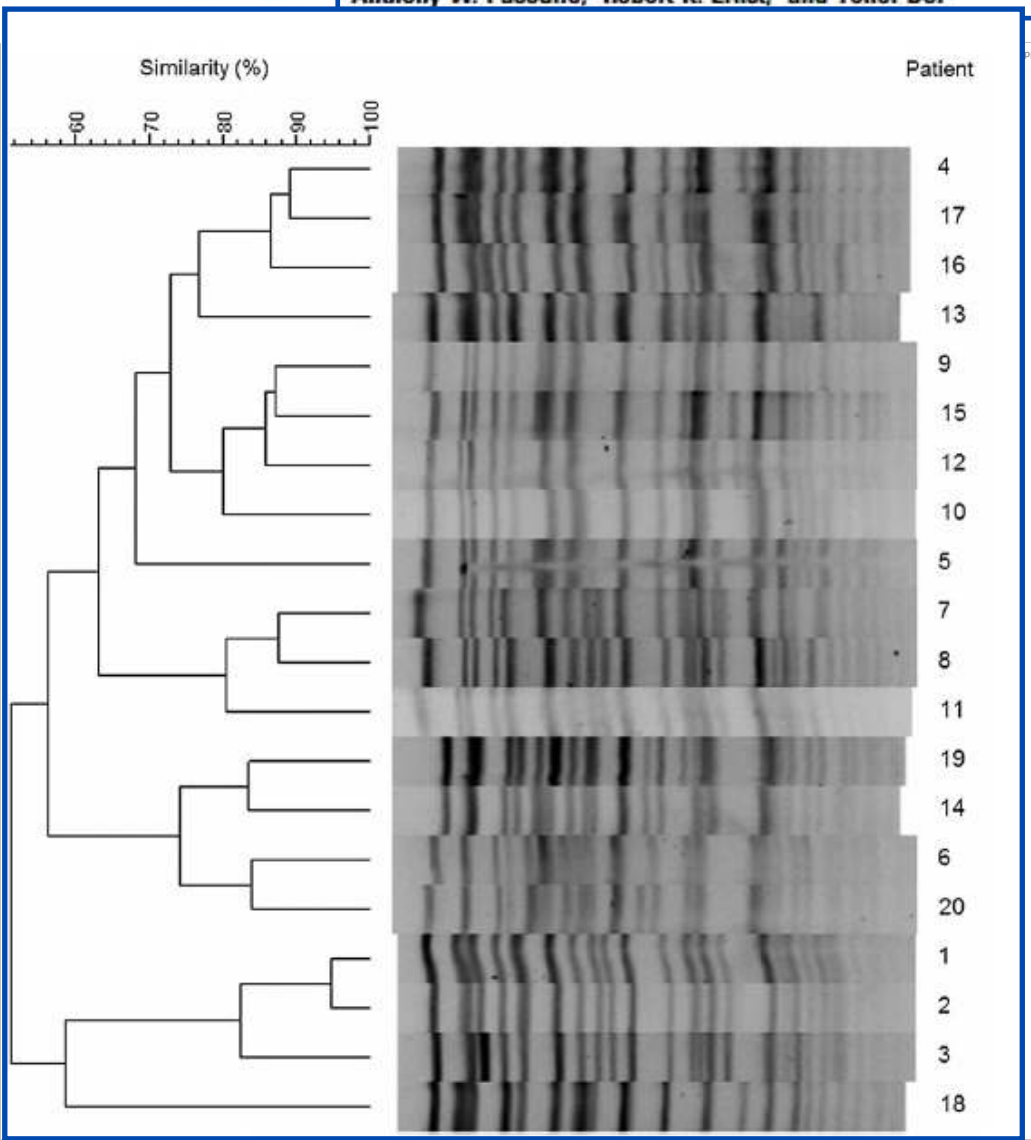
Table 1. Characteristics and Outcomes of Patients With Colistin-Resistant *Acinetobacter baumannii*

Patient	Age	Sex	Underlying Diseases	Culture Site	Type of Infection	ICU	APACHE II Score	Prior Intravenous CMS, d[a]	Prior Inhaled CMS, d[a]	Treatment of Colistin-Resistant Infection	Clinical Response	30-d Mortality	Death Attributable to Infection	90 d Recurrence
1	55	F	Lung transplant	Sputum	VAP	Yes	21	16	16	CMS, TIG, AMS	Failure	Yes	Yes	. . .
2	63	M	Heart transplant	Mediastinal fluid	Mediastinitis	Yes	25	8	None	CMS, TIG	Failure	Yes	Yes	. . .
3	43	M	Lung transplant	BAL	VAP	Yes	19	76	84	AMS, TIG, RIF	Failure	Yes	No[b]	. . .
4	53	M	Renal transplant	Sputum	VAP	Yes	20	5	None	CMS, DOR, AMS	Success	No	. . .	No
5	84	F	Dementia, recurrent pneumonia	Tracheal aspirate	VAP	Yes	20	14	14	CMS, DOR	Success	No	. . .	Yes
6	76	F	CVA	BAL	VAP	Yes	28	15	9	AMS	Failure	Yes	No[b]	. . .
7	36	M	Morbid obesity, liver cirrhosis	BAL	VAP	Yes	25	10	11	CMS, DOR	Failure	No	. . .	. . .
8	68	M	Lung transplant	Sputum	Colonization	Yes	22	4	7	None	. . .	No	. . .	No
9	61	M	Heart and lung transplant	Sputum	HAP	No	15	5	9	CMS, DOR, AMS	Success	No	. . .	Yes
10	52	F	Liver transplant	BAL	VAP	Yes	20	11	10	CMS, DOR, AMS	Success	No	. . .	No
11	62	M	Lung transplant	Bronchial wash	VAP	Yes	12	14	14	CMS, DOR, AMS	Success	No	. . .	No
12	71	M	Lung transplant	Bronchial wash	VAP	Yes	17	None	9	CMS (inhaled only), DOR	Success	No	. . .	No
13	62	F	Mental retardation, Parkinson's disease	BAL	VAP	Yes	13	28	28	CMS, DOR	Failure	Yes	Yes	. . .
14	66	F	CVA	BAL	VAP	Yes	20	32	15	CMS, DOR	Failure	Yes	Yes	. . .
15	63	M	CVA	BAL	Colonization	Yes	15	2	None	None	. . .	No	. . .	No
16	77	M	Lung transplant	Sputum	Colonization	Yes	17	7	7	None	. . .	No	. . .	No
17	63	F	Lung transplant	BAL	VAP	Yes	10	30	6	CMS, DOR, AMS	Success	No	. . .	No
18	25	F	Toxic epidermal necrolysis	Pleural fluid	VAP	Yes	19	21	21	CMS, MEM	Success	No	. . .	No
19	73	M	Lung transplant	Blood	Bacteremia	Yes	19	None[c]	None[c]	CMS, DOR, AMS	Success	No	. . .	No
20	57	M	COPD, tonsillar carcinoma	Blood	Bacteremia	Yes	27	7	5	CMS, DOR, AMS	Success	No	. . .	No

Colistin-Resistant *Acinetobacter baumannii*: Beyond Carbapenem Resistance

Clin Infect Dis 2015;60:1295-1303

Zubair A. Qureshi,[1] Lauren E. Hittle,[2] Jessica A. O'Hara,[1] Jesabel I. Rivera,[1] Alveena Syed,[1] Ryan K. Shields,[1] Anthony W. Pasculle,[3] Robert K. Ernst,[2] and Yohei Doi[1]



- 38 (18 kol-H, 18 kol-D, 2 kol-D) izolatın PFGE ile genotipik yakınlığı araştırılmış
- 9 klon tespit edilmiş
- Farklı hastalardan farklı klon tespit edilmiş
- Aynı hastadan izole edilen Kol-H ve Kol-D olgular aynı klona ait
- Kolistin direnci tedavi sırasında gelişiyor
- Dirençten Lipid A modifikasyonu sorumlu

Kolistine Dirençli Gram Negatif Bakteri

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

- Uzun süreli ve gereksiz kullanım
- Uygun sürede kullanılmalı, de-eskalasyon yapılmalı
- Enfeksiyon kontrolü önemli

In vitro synergism of combinations of colistin with selected antibiotics against colistin-resistant Acinetobacter baumannii

The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again.

Isolates	Colistin + Netilmicin		Colistin + Sulbactam		Colistin + Vancomycin	
	FICI	Result	FICI	Result	FICI	Result
1	2	indifference	0.562	indifference	0.126	synergy
2	0.255	synergy	0.265	synergy	0.257	synergy
3	2	indifference	0.507	indifference	0.515	indifference
4	0.562	indifference	0.187	synergy	0.140	synergy
5	0.531	indifference	0.375	synergy	0.046	synergy
6	0.507	indifference	0.281	synergy	0.281	synergy
7	0.532	indifference	0.187	synergy	0.281	synergy
8	1.25	indifference	0.75	indifference	0.124	synergy
9	1.015	indifference	1.031	indifference	0.253	synergy
10	1.25	indifference	1.5	indifference	0.140	synergy

Percin D, et al. GMS Hygiene and Infection Control 2014;9:1-5

Kolistine Dirençli *K.pneumoniae* Tedavi Seçenekleri

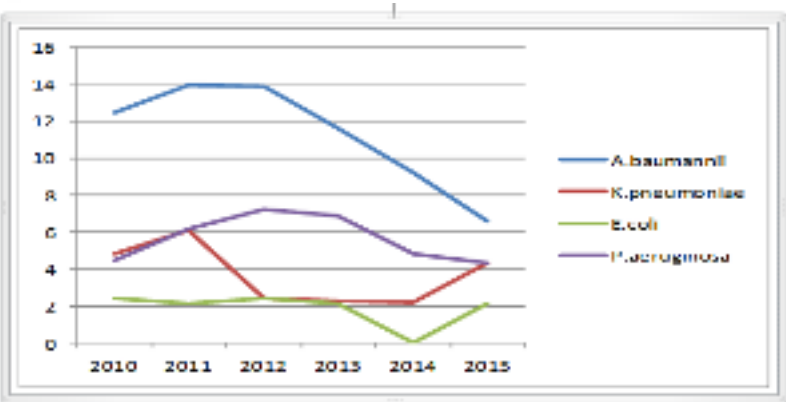
- Tigesiklin
- Aminoglikozid
- Fosfomisin
- İkili karbapenem (ertapenem+meropenem)+kolistin

GERÇEK BAŞARI ENFEKSİYON KONTROLÜNDE

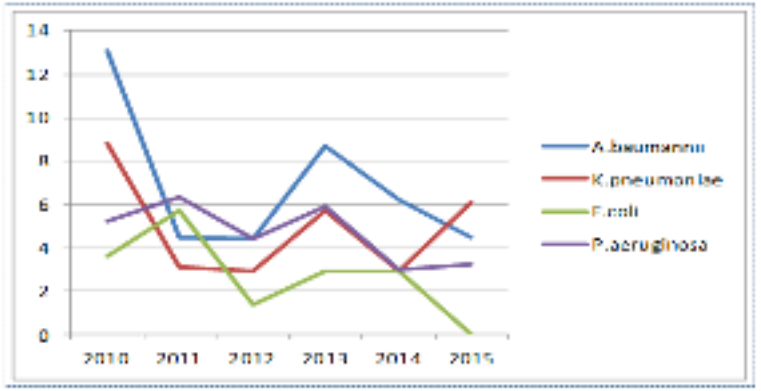
The image cannot be displayed. Your computer may no

Yoğun Bakım Ünitelerinde Enfeksiyon Kontrol Programının Dirençli Bakteri İnsidansı Üzerine Etkisinin Araştırılması

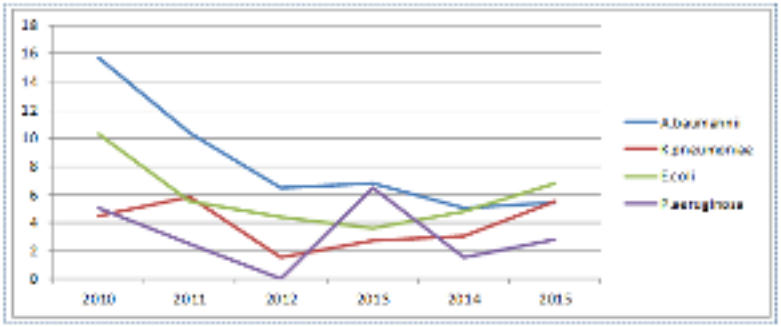
Fatma Cevahir[1], Ayşegül Ulu Kılıç[1,2], Emine Alp[1,2]



Şekil 1. DYBÜ 2010-2015 yılları arasında 1000 hasta gününde görülen mikro-organizmaların yıllara göre karşılaştırılması

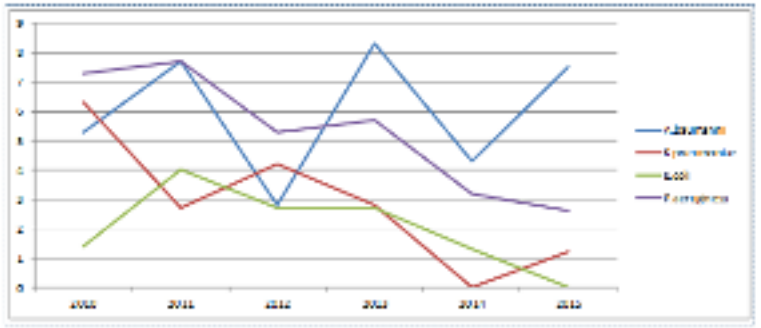


Şekil 2. ARYBİÜ 2010-2015 yılları arasında 1000 hasta gününde görülen mikro-organizmaların yıllara göre karşılaştırılması



Şekil 3. GCYBÜ 2010-2015 yılları arasında 1000 hasta gününde görülen mikro-organizmaların yıllara göre karşılaştırılması

HİKON 2016
PS-061



Şekil 4. BCYBÜ 2010-2015 yılları arasında 1000 hasta gününde görülen mikro-organizmaların yıllara göre karşılaştırılması

ENFEKSİYON KONTROLÜNDE TAKIM ÇALIŞMASI ÖNEMLİ

TEŞEKKÜRLER