Güncel Antimikrobiyal Tedavi Yaklaşımları

Dr.Meltem Işıkgöz Taşbakan

- **Tedavisi güç ve uzun**
- **Tedavi başarısı düşük**
- **Yıllar sonra rekürans**
- **Morbiditesi yüksek**

Defalarca opere edilen, uzun süre değişik antimikrobiyal tedaviler alan fakat enfeksiyonu ortadan kaldırılamayan hastalar

Hastalık patogenezi nedir?

Kemik enfeksiyonu nasıl tanınacak?

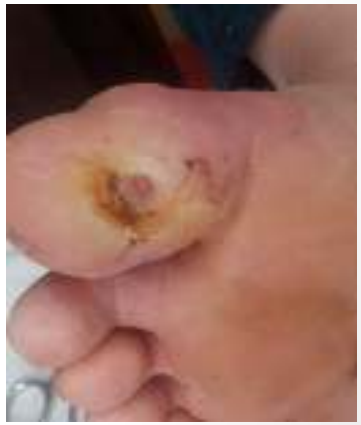
Sık ve nadir etyolojik ajanlar neler?

Cerrahi debridman ve rekonstrüktif işlemler ne zaman ve nasıl yapılacak?

Anti-enfektif tedavi prensipleri neler?

Tedaviye başlamadan….

- Hastanın klinik durumunu
  - Osteomiyelitin sınıflamadaki yeri belirlenmeli
- İzole edilen mikroorganizmanın tanımlanması ve antibiyotik duyarlılığının
  - Direnç durumu
- Cerrahi girişim açısından değerlendirilmeli
  - Debridman ve drenaj
- Antimikrobiyal tedavi



Conn Med. 2005 Apr;69(4):195-202.

Chronic osteomyelitis: results obtained by an integrated team approach to management.

Schuppa J[1], Rodnan G, Passmore RD, Livingston K, Schreiber J, Rosenti F

J. Bone Joint Infect. 2017, Vol. 2

IVYSPRING INTERNATIONAL PUBLISHER

European Bone & Joint Infection Society EBJIS

Journal of Bone and Joint Infection

2017; 2(4): 184-193. doi: 10.7150/jbji.21692

Research Paper

Osteomyelitis of the Pelvic Bones: A Multidisciplinary Approach to Treatment

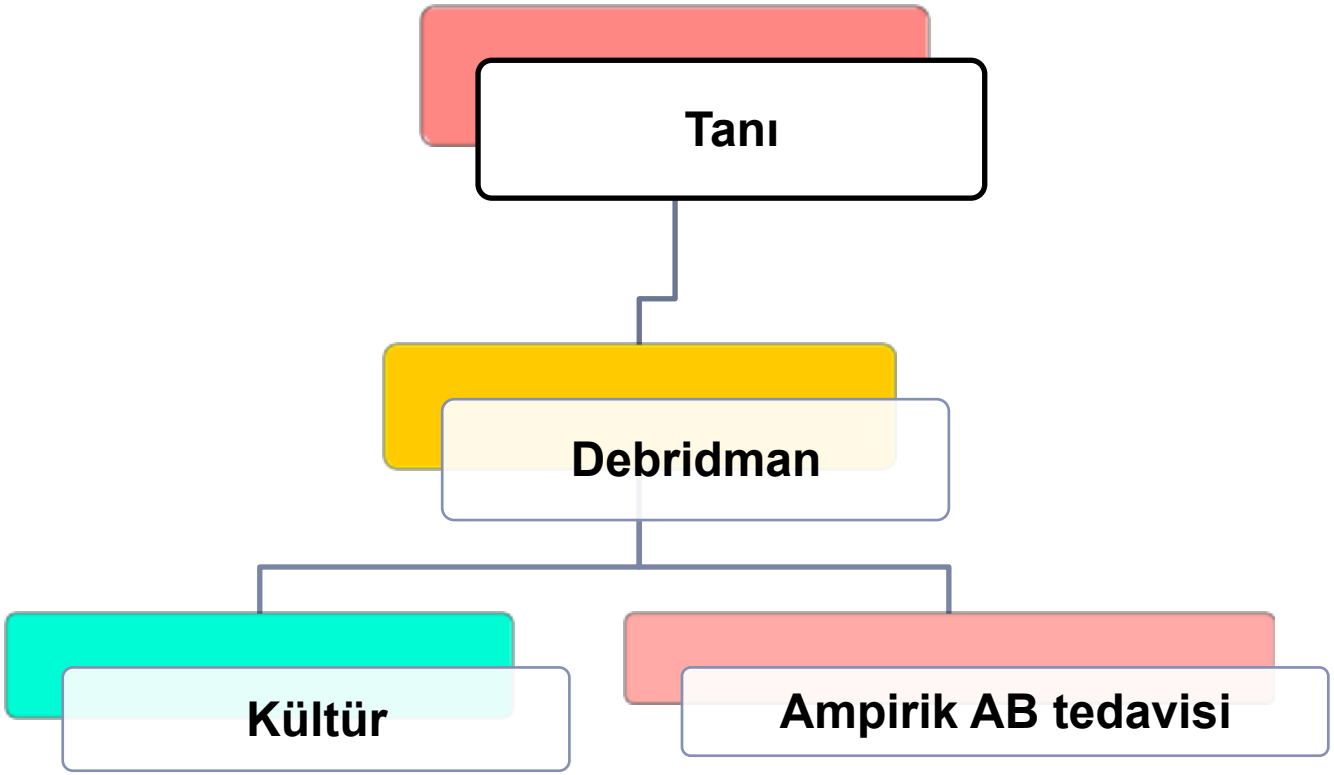
Maria Dudareva, Jamie Ferguson✉, Nicholas Riley, David Stubbs, Bridget Atkins, Martin McNally

Interpretation: Patients in this series have many comorbidities and risk factors for poor surgical outcome. Nevertheless, the multidisciplinary approach allows successful treatment in the majority of cases.

Zor enfeksiyonlar paylaşıldıkça aşılır
Kemik enfeksiyonları hep zor….

Amaç

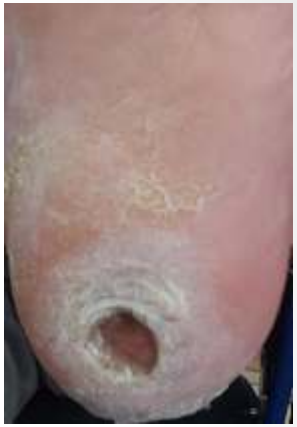
- Enfeksiyonu eradike etmek ve/veya fonksiyonu restore etmek
- Bunun için; hızlı tanı ve erken agresif medikal ve cerrahi tedavi kombinasyonu kronik enfeksiyon gelişme olasılığını ve daha kötü fonksiyonel sonuçları azaltacaktır.


Tanı
Debridman
Kültür
Ampirik AB tedavisi


Tanı
Debridman
Kültür
Ampirik AB tedavisi
İmplantın çıkarılması ?
Fraktür bölgesinin stabilitesi

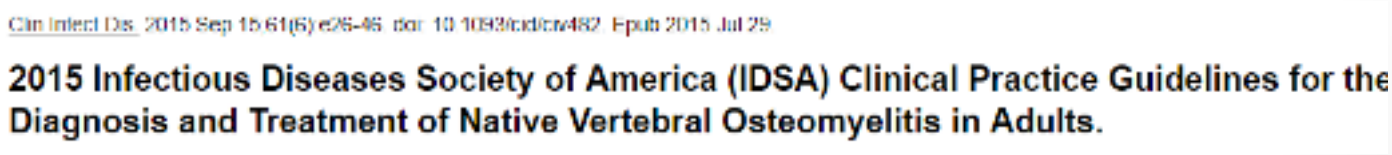

İmplantın çıkarılması ?
Fraktür bölgesinin stabilitesi
İyileşmiş
İyileşmemiş
Güvenle çıkar !
İnternal fiksasyon stabilse
Sistemik sepsis, fiksasyonda gevşeme, pürülan drenaj
Kaynama oluncaya kadar bırak !
İmplantı çıkar !
Debridman
Eksternal fiksasyon

Medikal tedavi…

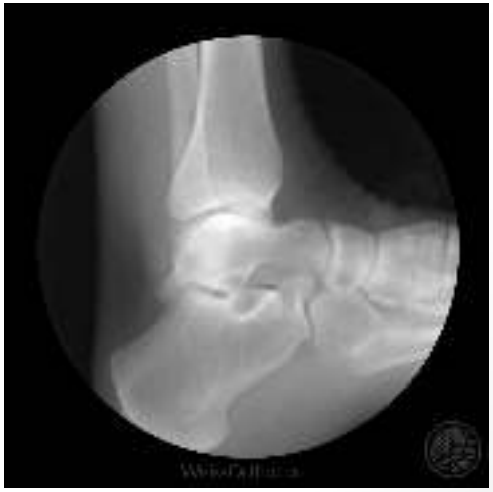


- Etken mikroorganizmanın
  - İdentifikasyonu ve in vitro antibiyotik duyarlılık durumu kritik öneme sahiptir.
- Eğer beraberinde yumuşak doku enfeksiyonu veya sepsis sendromu yoksa
  - perkutan aspirat
  - cerrahi derin kültürler alınıncaya kadar mümkünse antimikrobiyal tedavi bekletilmelidir.

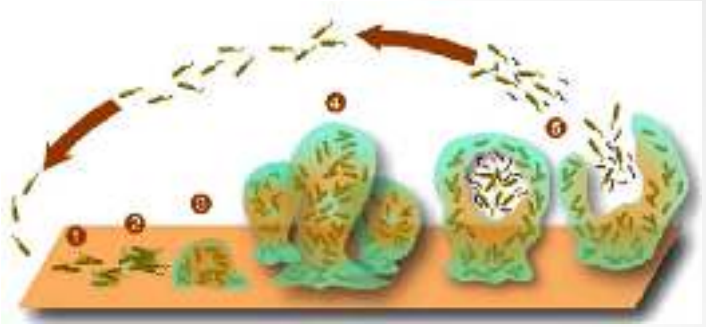
- İlk cerrahi debridmanda kültürler gönderildikten sonra
  - Yaş ve en sık olası etkenler dikkate alınarak ampirik sistemik antimikrobiyal tedavi başlanır.
- Kronik OM'de kültür sonuçları çıkana kadar tedaviye başlanmaması daha uygun bir yaklaşım
  - Genel durum iyi ise



- Antimikrobiyal tedavi seçiminde
  - Kemiğe iyi penetre olan,
  - Bakterisidal etkili,
  - Biyofilm tabakasını parçalayabilecek



Biofilm



- Enfeksiyonun seyrini etkiler.
- Alt tabakalarında anaaerobik ortam patojenlerin üreme hızını ve metabolik aktivitesini azaltır.
- İmmün sisteme ve antibiyotiklere duyarsız kalıcı virülan patojen kaynağı gibi görev yapar.

En iyi ajan ?

Oral mi? Parenteral mi?

Süre ?

Cerrahi debridman gerekli mi ?

En iyi …

- Kemik dokuda yoğunlaşmaması ve kemik korteksindeki antibiyotik düzeyinin serum konsantrasyonunun %5'inden daha az olması
- Uzun süre tedavi
- Yan etkiler az

Özdemir K, Arman D. Ortopedik enfeksiyonlarda akılcı antibiyotik tedavisi. TOTBİD Dergisi 2011:269-275

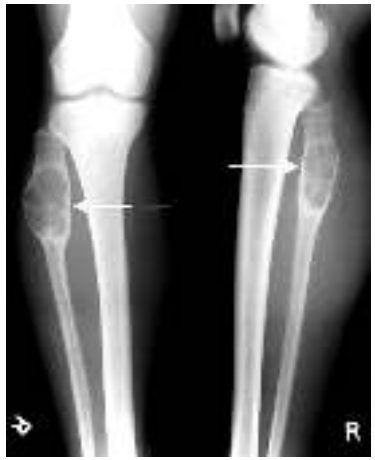
Kemik dokuya antibiyotik penetrasyonunun güçlüğü seçilecek antibiyotiğin serum konsantrasyonu yüksek olmalı ve uzun süre bu düzeyde kalmalıdır.

Özdemir K, Arman D. Ortopedik enfeksiyonlarda akılcı antibiyotik tedavisi. TOTBİD Dergisi 2011:269-275

Kemiğe penetrasyon…

- Kemikte olası etkenlerin MİK konsantrasyonuna ulaşan antimikrobikler:
  - Penisilinler
  - Sefalosporinler
  - Aminoglikozitler
  - Glikopeptitler
  - Klindamisin
  - Kinolonlar

Tigesiklin, daptomisin, linezolit



considerations. Clin Pharmacokinet 2009; 48:89. Retrieved no results.

Clin Pharmacokinet. 2009;48(2):89-124. doi: 10.2165/0003088-200948020-00002.

Penetration of antibacterials into bone: pharmacokinetic, pharmacodynamic and bioanalytical considerations.

Bone penetration for selected antibiotics

Antibiotic	Range of mean bone to serum concentration ratios
Levofloxacin	0.36 to 1.0
Ciprofloxacin	0.27 to 1.2
Moxifloxacin	0.33 to 1.05
Vancomycin	0.05 to 0.67
Linezolid	0.2 to 0.51
Daptomycin	1.17*
Clindamycin	0.21 to 0.45
Cefazolin	0.179
Ceftriaxone	0.07 to 0.17
Cefuroxime	0.04 to 0.55
Rifampin (rifampicin)	0.08 to 0.57

considerations. Clin Pharmacokinet 2009; 48:89. Retrieved no results.

Clin Pharmacokinet. 2009;48(2):89-124. doi: 10.2165/0003088-200948020-00002.

Penetration of antibacterials into bone: pharmacokinetic, pharmacodynamic and bioanalytical considerations.

- 1998-2007 yılları arasında yayınlanan yayınlar
- Kemikdeki konsantrasyonlar ile ilgili farklı oranlar
- Kinolonlar linezolid +++
- Daptomisin ?

Contents lists available at ScienceDirect

International Journal of Infectious Diseases

journal homepage: www.elsevier.com/locate/ijid

Review

Duration of post-surgical antibiotics in chronic osteomyelitis: empiric or evidence-based?

Rachid Haidar *, Asdghig Der Boghossian, Bisharah Atiyeh

Department of Surgery, American University of Beirut Medical Center, PO Box 11-0236, Riad El Solh, 1107 2020, Beirut, Lebanon

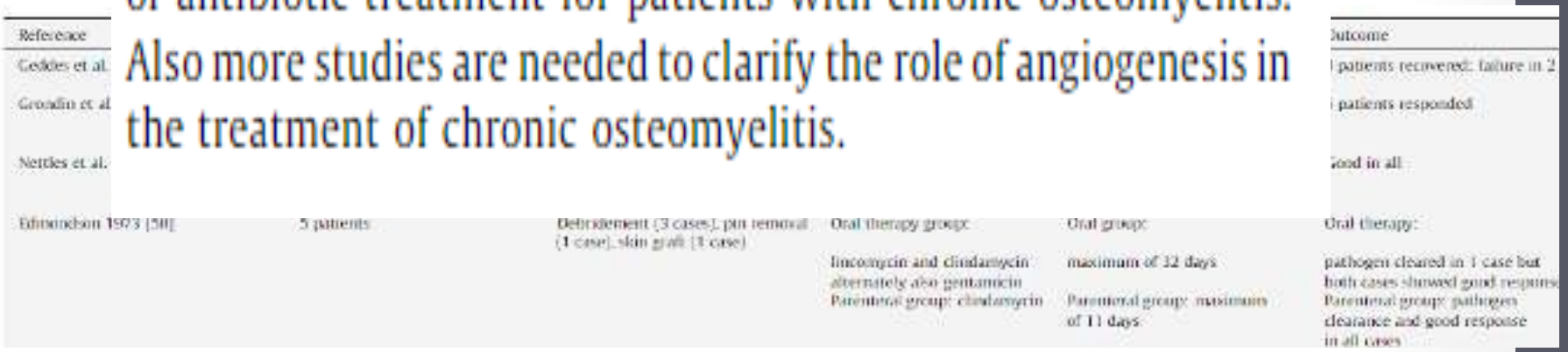
- 1970 yılından itibaren hayvan deneyleri

Table 1
Animal studies on the treatment of osteomyelitis

Reference	Disease case	Antibiotic treatment	Antibiotic duration
Salgado et al. 2006 [14]	Osteomyelitis of lower extremity of goat	Cefazolin	5 days
Norden et al. 1980 [35]	Staphylococcal chronic osteomyelitis in rabbit	Rifampin and trimethoprim	7, 14, 28 days
Norden 1983 [36]	Staphylococcal osteomyelitis	Rifampin, sisomicin, and cephalothin	14 days
Norden and Shaffer 1982 [37]	Chronic osteomyelitis in rabbit, *Pseudomonas aeruginosa*	Azlocillin and tobramycin	14, 28 days
Mader and Wilson 1983 [38]	Staphylococcal osteomyelitis in rabbit	Cefamandole or cephalothin	28 days
Rissing et al. 1985 [39]	Staphylococcal chronic osteomyelitis in rat	Oxacillin or ceftriaxone	14, 28 days
Nelson et al. 1990 [40]	Chronic *Pseudomonas aeruginosa* osteomyelitis in rat	Subcutaneous ceftazidime alone or in combination with tobramycin	14 days
Dart and Hodgson 1996 [41]	Chronic osteomyelitis in horse	Penicillin and gentamicin	10 days
Monzon et al. 2001 [42]	Staphylococcal chronic osteomyelitis in rat	Cefuroxime, vancomycin, tobramycin or ciprofloxacin	21 days
Shirtliff et al. 2001 [43]	Staphylococcal chronic osteomyelitis in rabbit	Levofloxacin and nafcillin	28 days
Kadry et al. 2004 [44]	Chronic staphylococcal osteomyelitis in rabbits	Ciprofloxacin and vancomycin (liposomal form of the combination)	14 days
Yin et al. 2005 [45]	Methicillin-resistant *Staphylococcus aureus* osteomyelitis	Subcutaneous tigecycline or vancomycin with or without oral rifampin	28 days

- Kısa süreli tedaviler (3-14 gün)
- Uzun süreliler zaten biliniyor

antibiotic treatment. And although the surgical approach in treating chronic osteomyelitis has advanced markedly, the same duration of antibiotic treatment is still adopted. Properly designed studies are needed to ascertain the optimal duration of antibiotic treatment for patients with chronic osteomyelitis. Also more studies are needed to clarify the role of angiogenesis in the treatment of chronic osteomyelitis.



Reference					Outcome
Geddes et al.					patients recovered; failure in 2
Grondin et al.					patients responded
Nettles et al.					Good in all
Edmondson 1973 [58]	5 patients	Debridement (3 cases), pin removal (1 case), skin graft (1 case)	Oral therapy group: lincomycin and clindamycin alternately also gentamicin Parenteral group: clindamycin	Oral group: maximum of 32 days Parenteral group: maximum of 11 days	Oral therapy: pathogen cleared in 1 case but both cases showed good response Parenteral group: pathogen clearance and good response in all cases

Antibiotic therapy for acute osteomyelitis in adults

Infectious agent	Antibiotic	Dosing
MSSA	Nafcillin	2 g IV every 4 hours
	Oxacillin	2 g IV every 4 hours
	Cefazolin	2 g IV every 8 hours
MRSA*	Vancomycin¶	30 to 40 mg/kg IV every 24 hours in two or three divided doses; not to exceed 2 g/dose
Coagulase-negative staphylococci	Vancomycin¶	30 to 40 mg/kg IV every 24 hours in two or three divided doses; not to exceed 2 g/dose unless serum trough levels are inappropriately low
Gram-negative organisms (including *Pseudomonas*)	Ciprofloxacin	750 mg orally twice daily or 400 mg IV every 12 hours; if treating *Pseudomonas,* increase IV dose to 400 mg IV every 8 hours$^{\Delta}$
	Levofloxacin	750 mg orally or IV once daily
	Ceftazidime	2 g IV every 8 hours
	Cefepime	2 g IV every 8 to 12 hours
Empiric therapy	Vancomycin PLUS an agent with activity against gram-negative organisms	

Mikroorganizma	İlk tercih	Alternatif
S.aureus (metisilin duyarlı)	Nafsilin veya oksasilin (2 g q6h IV) Fluoksasilin (2 g q6h IV) Sefazolin (2 g q8h IV) Ampisilin-sulbaktam (1.5-3 g q6h IV)	Klindamisin 600 mg q 8h IV) Vankomisin (1 g q12h IV) Rifampisin (600 mg/g PO + siprofloksasin 750 mg q12h PO veya levofloksasin ile kombinasyon)
S.aureus (metisilin dirençli)	Vankomisin (1 g q12h IV)	Teikoplanin (800 mg q 24 h IV/IM) Linezolid (600 mg q 12h PO/IV) Rifampisin (600 mg/PO + levofloksasin 500-750 mg q24 h PO/IV)
Penisilin duyarlı streptokoklar	Kristalize penisilin G (3-4 MÜ q4h-IV)	Sefazolin (1-2 g q8h IV) Seftriakson (2g q24h IV) Klindamisin (600 mg q8h IV) Vankomisin (1 g q12h IV)
Streptococcus pneumoniae	Kristalize penisilin G (3-4 MÜ q4h-IV)	Sefazolin (1-2 g q8h IV) Seftriakson (2g q24h IV) Klindamisin (600 mg q8h IV) Vankomisin (1 g q12h IV)
Enterokoklar	Ampisilin (2g q4h IV)	Vankomisin (1 g q12h IV)
Enterik GN basiller	Seftriakson (2g q24h IV)	Siprofloksasin (500-750 mg q12h po) Selepim (2g q12h IV) İmipenem (500 mg q6h IV) Meropenem (1 g q8h IV)
P.aeruginosa	Seftazidim (2g q8h IV) Sefepim (2g q12 h IV) Pip-tazo (4.5 g q8h IV)	Siprofloksasin (400 mg q12h IV) İmipenem (500 mg q6h IV) Meropenem (1 g q8h IV)
Anaeroblar	Klindamisin(600 mg q6h IV)	Amoksisilin-klavulonik asit Metronidazol 500 mg q8h IV)
Miks enfeksiyon	Ampisilin –sulbaktam (2-3 g q6h IV)	İmipenem (500 mg q6h IV)

IDSA GUIDELINE

2015 Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Treatment of Native Vertebral Osteomyelitis in Adults[a]

Elie F. Berbari,[1] Souha S. Kanj,[2] Todd J. Kowalski,[3] Rabih O. Darouiche,[4] Andreas F. Widmer,[5] Steven K. Schmitt,[6] Edward F. Hendershot,[7] Paul D. Holtom,[8] Paul M. Huddleston III,[9] Gregory W. Petermann,[10] and Douglas R. Osmon[11]

Table 2. Parenteral Antimicrobial Treatment of Common Microorganisms Causing Native Vertebral Osteomyelitis

Microorganism	First Choice[a]	Alternatives[a]	Comments[b]
Staphylococci, oxacillin susceptible	Nafcillin[c] sodium or oxacillin 1.5–2 g IV q4–6 h or continuous infusion or Cefazolin 1–2 g IV q8 h or Ceftriaxone 2 g IV q24 h	Vancomycin IV 15–20 mg/kg q12 h[d] or daptomycin 6–8 mg/kg IV q24 h or linezolid 600 mg PO/IV q12 h or levofloxacin 500–750 mg PO q24 h and rifampin PO 600 mg daily [122] or clindamycin IV 600–900 mg q8 h	6 wk duration
Staphylococci, oxacillin resistant [123]	Vancomycin IV 15–20 mg/kg q12 h (consider loading dose, monitor serum levels)	Daptomycin 6–8 mg/kg IV q24 h or linezolid 600 mg PO/IV q12 h or levofloxacin PO 500–750 mg PO q24 h and rifampin PO 600 mg daily [122]	6 wk duration
Enterococcus species, penicillin susceptible	Penicillin G 20–24 million units IV q24 h continuously or in 6 divided doses; or ampicillin sodium 12 g IV q24 h continuously or in 6 divided doses	Vancomycin 15–20 mg/kg IV q12 h (consider loading dose, monitor serum levels) or daptomycin 6 mg/kg IV q24 h or linezolid 600 mg PO or IV q12 h	Recommend the addition of 4–6 wk of aminoglycoside therapy in patients with infective endocarditis. In patients with BSI, physicians may opt for a shorter duration of therapy. Optional for other patients [124, 125]. Vancomycin should be used only in case of penicillin allergy.
Enterococcus species, penicillin resistant[e]	Vancomycin IV 15–20 mg/kg q12 h (consider loading dose, monitor serum levels)	Daptomycin 6 mg/kg IV q24 h or linezolid 600 mg PO or IV q12 h	Recommend the addition of 4–6 wk of aminoglycoside therapy in patients with infective endocarditis. In patients with BSI, physicians may opt for a shorter duration of aminoglycoside. The additional of aminoglycoside is optional for other patients [124, 125].

optional for other patients [124, 125].

Pseudomonas aeruginosa	Cefepime 2 g IV q8–12 h or meropenem 1 g IV q8 h or doripenem 500 mg IV q8 h	Ciprofloxacin 750 mg PO q12 h (or 400 mg IV q8 h) or aztreonam 2 g IV q8 h for severe penicillin allergy and quinolone-resistant strains or ceftazidime 2 g IV q8 h	6 wk duration Double coverage may be considered (ie, β-lactam and ciprofloxacin or β-lactam and an aminoglycoside).
Enterobacteriaceae	Cefepime 2 g IV q12 h or ertapenem 1 g IV q24 h	Ciprofloxacin 500–750 mg PO q12 h or 400 mg IV q12 hours	6 wk duration
β-hemolytic streptococci	Penicillin G 20–24 million units IV q24 h continuously or in 6 divided doses or ceftriaxone 2 g IV q24 h	Vancomycin IV 15–20 mg/kg q12 h (consider loading dose, monitor serum levels)	6 wk duration Vancomycin only in case of allergy.
Propionibacterium acnes	Penicillin G 20 million units IV q24 h continuously or in 6 divided doses or ceftriaxone 2 g IV q24 h	Clindamycin 600–900 mg IV q8 h or vancomycin IV 15–20 mg/kg q12 h (consider loading dose, monitor serum levels)	6 wk duration Vancomycin only in case of allergy.
Salmonella species	Ciprofloxacin PO 500 mg q12 h or IV 400 mg q12 h	Ceftriaxone 2 g IV q24 h (if nalidixic acid resistant)	6–8 wk duration

Oral-Parenteral

The future of new oral antibiotics including the quinolones

CMAJ, VOL. 138, JANUARY 1, 1988

Michel G. Bergeron, MD, FRCPC

Curr Opin Infect Dis. 2003 Dec;16(6):515-9.

Role of oral antimicrobial therapy in the management of osteomyelitis.

SUMMARY: The standard of care for chronic osteomyelitis in adults remains intravenous antimicrobial therapy, in combination with surgery, for at least 4-6 weeks. Acute osteomyelitis in the pediatric population as well as osteomyelitis caused by atypical Gram-positive organisms and some Gram-negative organisms may be treated successfully with oral antibiotics. Some antimicrobials have equivalent concentration in serum whether administered orally or parenterally. When therapy with these antimicrobials is indicated, the oral route is preferred in compliant patients. As research continues in this area and as new drug formulations are developed, oral therapy may become an accepted alternative in additional selected patients.

Tedavi süresi

- İdeal süre ?
- Klinik cevaba bağlı olarak 4-6 hafta
- Bu önerilerin dayandığı gözlemler:
  - Debridmanı takiben kemiğin ve çevre yumuşak dokunun revaskülarizasyonu 4-6 hafta alır.
  - Böylelikle, en azından ilk 2-3 hafta antibiyotiklerin tedavi edici dozlarının enfekte bölgeye ulaşması mümkün değildir.

Lancet. 2015 Mar 7;385(9971):875-82. doi: 10.1016/S0140-6736(14)61233-2. Epub 2014 Nov 5.

Antibiotic treatment for 6 weeks versus 12 weeks in patients with pyogenic vertebral osteomyelitis: an open-label, non-inferiority, randomised, controlled trial.

- 71 merkez
- Mikrobiyolojik ve radyolojik kanıt
- 359 hasta iki grup

(12-week group), severe mitral endocarditis (6-wee

	6-week regimen (n=176)	12-week regimen (n=175)	Total (n=351)	p value
Treatment duration, weeks	6 (6–6·6)	12·1 (12–13)	9·3 (6–12·1)	..
Oral fluoroquinolone and rifampicin	76 (43%)	79 (45%)	155 (44%)	0·793
Other combinations				..
Rifampicin and aminoglycoside	22 (13%)	25 (14%)	47 (13%)	..
Rifampicin and amoxicillin	3 (2%)	4 (2%)	7 (2%)	..
Fluoroquinolone and aminoglycoside	14 (8%)	11 (6%)	25 (7%)	..
Fluoroquinolone and meticillin	4 (2%)	3 (2%)	7 (2%)	..
Fluoroquinolone and cephalosporin	6 (3%)	6 (3%)	12 (3%)	..
Amoxicillin and aminoglycoside	15 (9%)	17 (10%)	32 (9%)	..
Cephalosporin and aminoglycoside	4 (2%)	3 (2%)	7 (2%)	..
Meticillin and aminoglycoside	2 (1%)	0	2 (1%)	..
Other	30 (17%)	27 (15%)	57 (16%)	..
Intravenous treatment duration, weeks	15 (7·0–28·0)	14 (6·5–26·5)	14 (7·0–27)	0·579

Data are median (IQR) or number (%) unless otherwise specified.

	6-week regimen (n=176)	12-week regimen (n=175)	Total (n=351)
Age, years	62 (16)	60 (17)	61 (17)
Female	61 (35%)	48 (27%)	109 (31%)
Comorbidity			
Immunodepression	5 (3%)	11 (6%)	16 (5%)
Diabetes	36 (20%)	18 (10%)	54 (15%)
Clinical characteristics			
Fever	87 (49%)	95 (54%)	182 (52%)
Back pain	172 (98%)	165 (94%)	337 (96%)
Duration of infection, days	34 (19–58)	34 (18–57)	34 (18–58)
Number of sites of vertebral osteomyelitis			
1	159 (90%)	154 (88%)	313 (89%)
≥2	17 (10%)	21 (12%)	38 (11%)
Type of site of vertebral osteomyelitis			
Cervical level	28 (16%)	24 (14%)	52 (15%)
Thoracic level	46 (26%)	50 (29%)	96 (27%)
Lumbar level	125 (71%)	121 (69%)	246 (70%)
Sacral level	19 (11%)	26 (15%)	45 (13%)
Associated endocarditis*			
Duke definite	23/127 (18%)	28/130 (22%)	51/257 (20%)
Probable	4/127 (3%)	1/130 (1%)	5/257 (2%)
Neurological signs	25 (14%)	32 (18%)	57 (16%)
Radiological biological characteristics			
MRI	157 (89%)	159 (91%)	316 (90%)
CT scan	88 (50%)	80 (46%)	168 (48%)
C-reactive protein concentration			
Absolute concentration, mg/L	118 (103)	126 (108)	122 (105)
Concentration >10 mg/L	157 (89%)	161 (92%)	318 (91%)
Microbiological diagnosis			
Blood culture	119 (68%)	121 (69%)	240 (68%)
CT-vertebral biopsy	67 (38%)	71 (41%)	138 (39%)
Perioperative surgical biopsy	9 (5%)	10 (6%)	19 (5%)
Microbiological identification			
Staphylococcus aureus†	69 (39%)	76 (43%)	145 (41%)
Coagulase-negative Staphylococcus†	29 (16%)	32 (18%)	61 (17%)
Streptococcus spp	32 (18%)	31 (18%)	63 (18%)
Enterococcus spp	11 (6%)	15 (9%)	26 (7%)
Enterobacterial spp	22 (13%)	16 (9%)	38 (11%)
Anaerobia	7 (4%)	6 (3%)	13 (4%)
Other Gram-negative bacteria	6 (3%)	4 (2%)	10 (3%)
Other Streptococcus	4 (2%)	4 (2%)	8 (2%)

The Brazilian Journal of
INFECTIOUS DISEASES
www.elsevier.com/locate/bjid

Review article

Recommendations for the treatment of

BRAZ J INFECT DIS. 2014;18(5):526–534

Table 4 – Suggested empirical initial antimicrobial regimens for osteomyelitis.

Clinical situation		Initial antimicrobial	Possible oral regimens
Community associated	Acute (child < 4 months or NB)	Oxacillin, cefazolin or clindamycin[a] + ceftazidime or cefepime	Starting oral treatment in this situation is not recommended. After obtaining the culture results, the regimen is adjusted
	Acute (child > 4 months or NB)	Oxacillin or cefazolin[a]	Starting oral treatment in this situation is not recommended. After obtaining the culture results, the regimen is adjusted
	Acute adults	Oxacillin or cefazolin	Starting oral treatment in this situation is not recommended. After obtaining the culture results, the regimen is adjusted
Healthcare associated	Child and adults (for example, infection after fracture fixation)	Glycopeptide + ceftazidime, cefepime, iperacillin/tazobactan or carbapenem agents[b]	Starting oral treatment in this situation is not recommended. After obtaining the culture results, the regimen is adjusted
Hemoglobinopathy	*Salmonella* spp. and other GNBs should be considered	Ceftriaxone or fluoroquinolone	Fluoroquinolone

[a] Considering local prevalence of CA-MRSA.
[b] Considering local patterns of bacterial susceptibility.

Adjuvant treatment – HBO

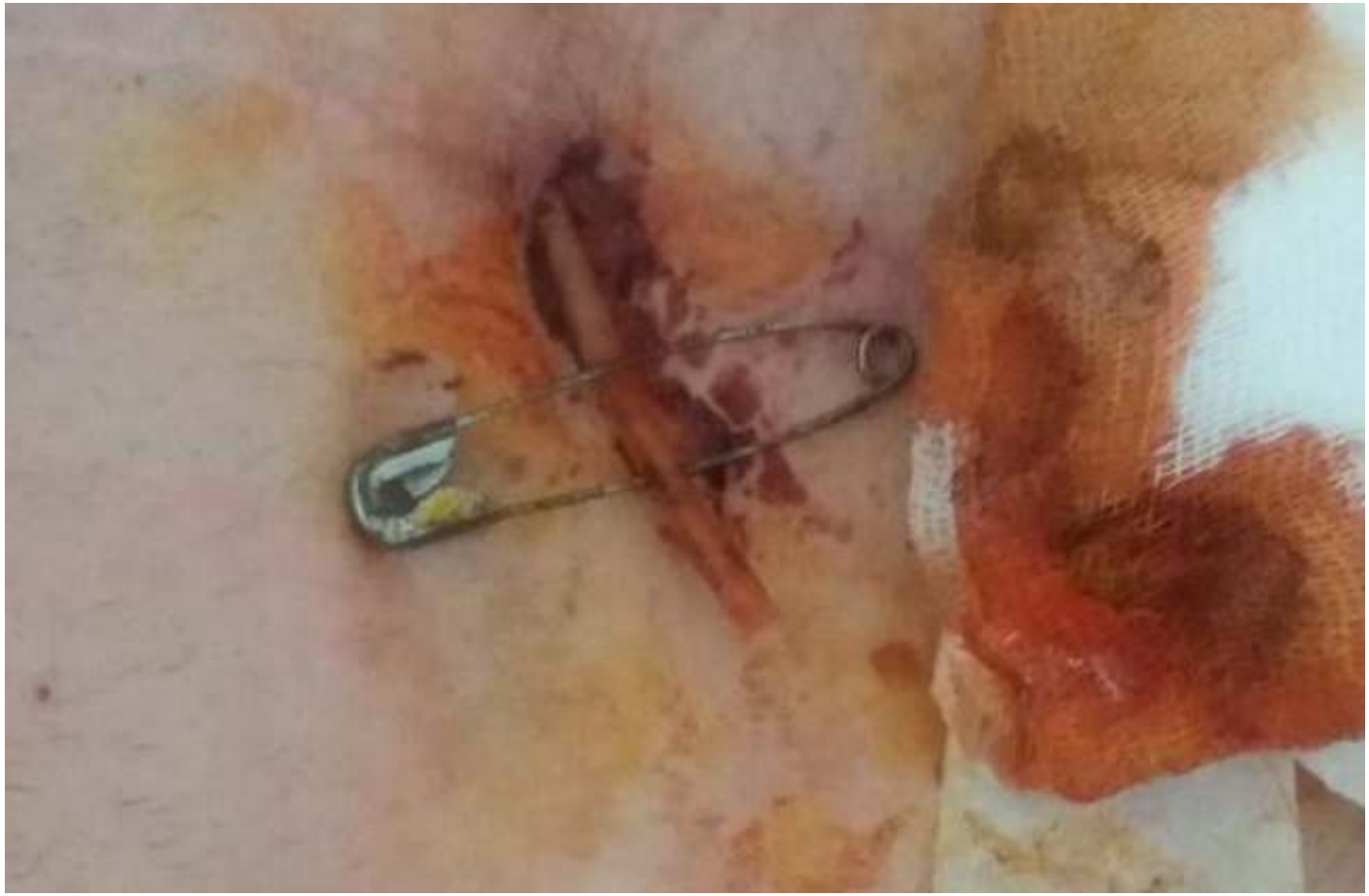
of infections. The use of hyperbaric oxygen (O_2HB) is associated with all the other therapeutic measures, making them more effective. Wound healing time is accelerated, the esthetic results are better, and the final cost of treatment is also reduced.[1]

Lokal antibiyotik uygulamaları

- Yardımcı yöntem
- Gentamisin, tobramisin
- Kronik osteomiyelitte seçilen antibiyotik sorumlu ajana etkin olmalı
- MİK (Minimum inhibitör konsantrasyonu) lokal salınım ile birkaç kat tercihen 10 kat daha fazla sağlanabilmeli
- Sistemik dolaşıma geçmemeli
- Yan etkisi çok az veya hiç olmamalı
- Vücut ısısında dengeli ve suda çözülebilir olmalı
- Süper enfeksiyona yol açmamalıdır

The Role of Polymethylmethacrylate Antibiotic–loaded Cement in Addition to Debridement for the Treatment of Soft Tissue and Osseous Infections of the Foot and Ankle Valerie L. Schade,

Lokal başka ne olabilir



Clin Infect Dis. 2015 Sep 15;61(6):e26-46. doi: 10.1093/cid/civ482. Epub 2015 Jul 29.

2015 Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Treatment of Native Vertebral Osteomyelitis in Adults.

- 6 hafta parenteral veya oral
- Brucelloz 3 ay

- Tedaviyi nasıl takip edelim
- 4 haftalık tedaviden sonra
  - CRP, Sedimantasyon
  - MR takipte
    - Klinik yanıt

Tedavi başarısızlığı

- 4 hafta sonra
- CRP ve sedimantasyonda değişiklik olmaması veya artması
- MRI(paraspinal ve epidural)
- Klinik ve radyolojik bulgulara ilave olarak
  - Bakteriyel, mikobakteriyel ve mikolojik kültür

- Multidisipliner değerlendirilmeli

Yardımcı İlaçlar

- Rifampisin
- Fusidik asit
  - Lokal kullanımı kısıtlanmalı
- Kombine tedavide kullanılabilir
- Tek başına DİRENÇ……

Sonuç

- Anatomik ve patofizyolojik nedenlerle tedavi başarısı düşük, tanısı zor, hasta açısından uzun seyirli ve zahmetli bir süreç oluşturan OM yönetiminin her aşamasında ortaya çıkan sorunların, disiplinler arası sıkı işbirliği, sabır ve karşılıklı sahiplenme duygusu ile en hasarsız şekilde atlatılarak tedavi başarısının yükseltilmesi mümkün olacaktır.

Yemekten önce birazda güzel resimlere bakalım