INFECCIONES ASOCIADAS A DISPOSITIVOS EN SISTEMA NERVIOSO CENTRAL

SOCIETAT CATALANA DE MALALTIES INFECCIOSES I MICROBIOLOGIA CLÍNICA

Iván Pelegrín
Servicio de Enfermedades Infecciosas
20 Marzo 2025

Hospital del Mar Barcelona

INTRODUCCIÓN

- Infecciones complejas que pueden asociar mortalidad, secuelas neurológicas y consumo de recursos

- Manejo poco homogéneo debido pocos casos por centro y evidencia científica basada en estudios retrospectivos

NEUROCIRUGIA. 2012;**23(2)**:54–59

Jiménez-Martínez *et al. Antimicrobial Resistance and Infection Control* (2019) 8:69

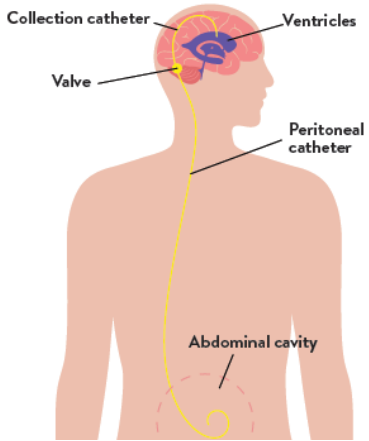
J Neurol Neurosurg Psychiatry 2009;**80**:1381–1385.

INFECCIONES ASOCIADAS A DISPOSITIVOS

Dispositivos de derivación de LCR

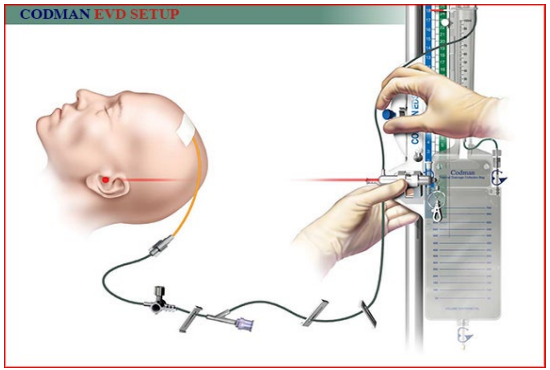
Permanentes:DVP

Infección
2-13%



Temporales: DVE/DLE

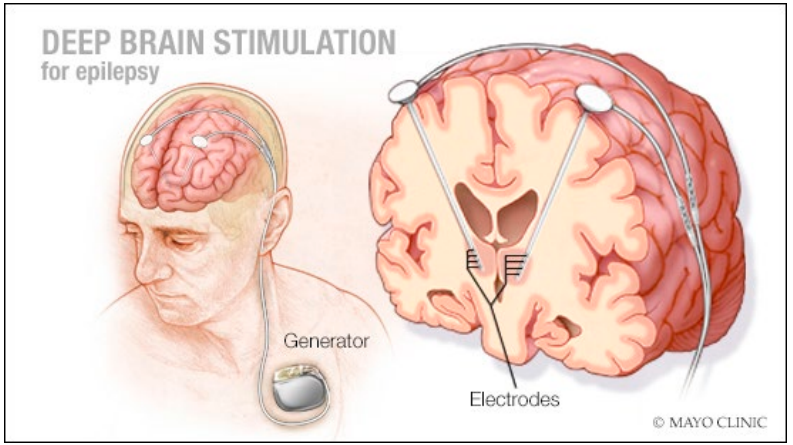
Infección
2-20%



Infect Control Hosp Epidemiol 2013;34(6):597-604

Neuroestimuladores corticales/ cerebrales

Infección
3-9%



Journal of Hospital Infection 89 (2015) 281–286

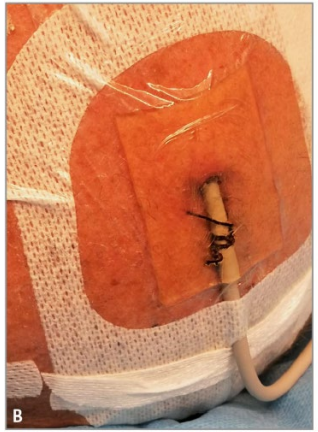
J Neurol (2008) 255:1617–1624

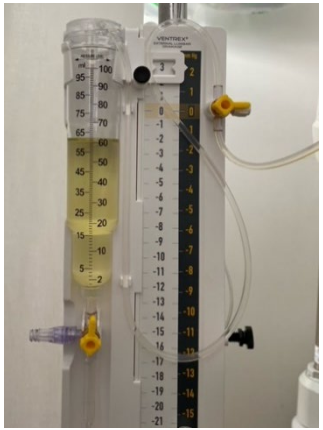
Dispositivos de derivación de LCR

Hidrocefalia: disbalance producción/absorción LCR

Tratamiento de la hidrocefalia aguda

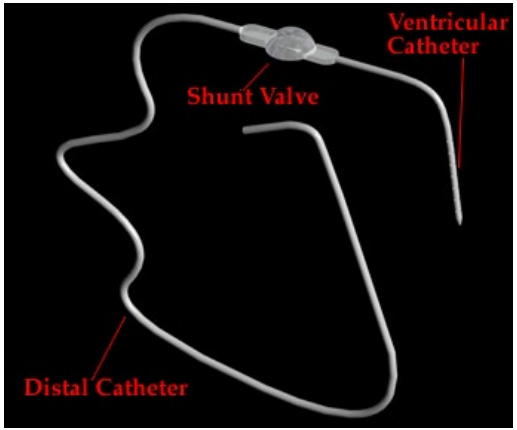
DVE/DLE



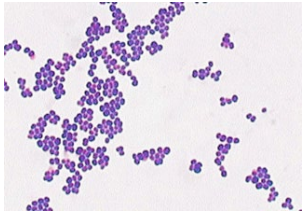


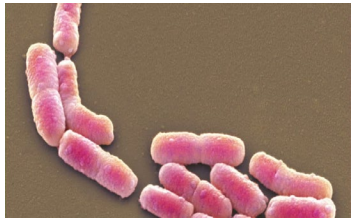
Tratamiento de la hidrocefalia crónica

DVP



ETIOPATOGENIA





Incremento de infecciones por bacilos Gram – en inf DVE

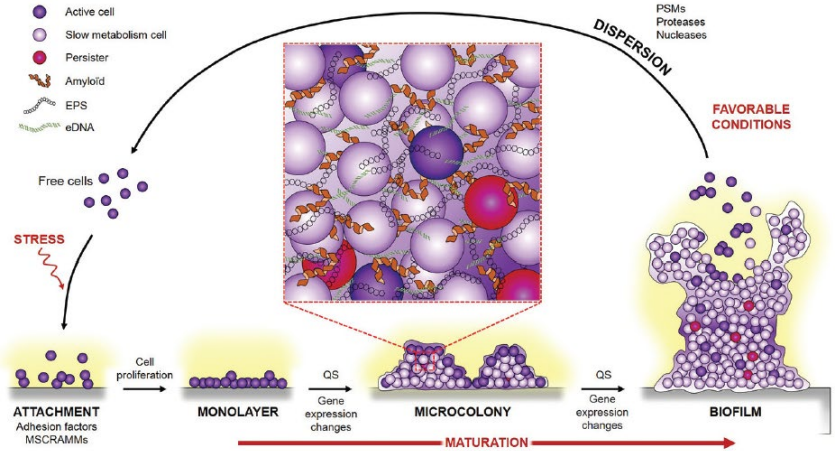
Table 3 Microbiology of EVD-related ventriculomeningitis

Staphylococcus epidermidis	70 %
Staphylococcus aureus	10 %
Others (including gram negative bacteria and fungi)	< 20 %
– Gram negative rods (Klebsiella spp., E. coli, Pseudomonas spp.)	15 %
– Anaerobes	rare
– Candida spp.	very rare

J Neurol (2008) 255:1617–1624

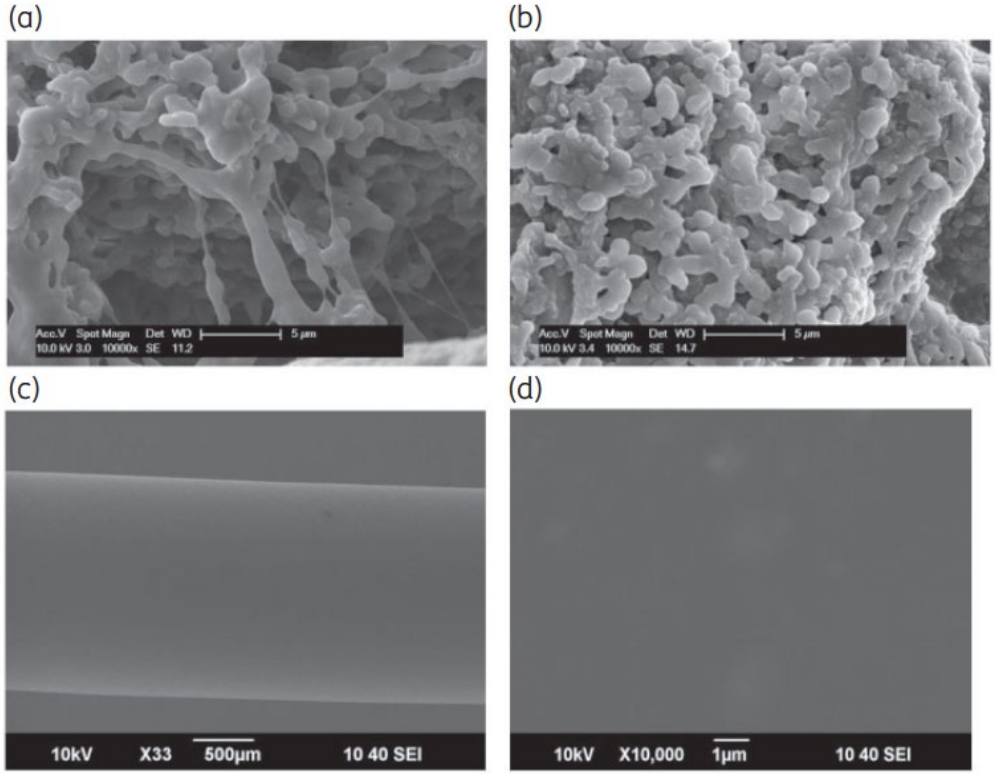
Stenehjem E. et al. Infect Dis Clin N Am 26 (2012) 89-110.

Biofilm



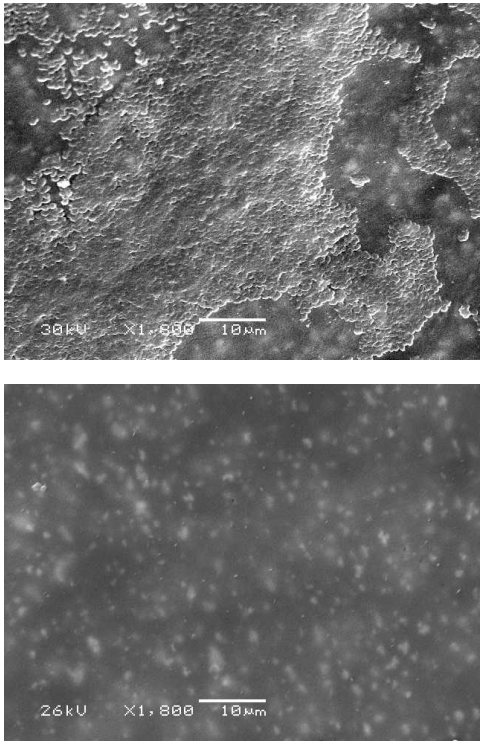
Staphylococcus aureus Biofilms and their Impact on the Medical Field
http://dx.doi.org/10.5772/66380

MICROSCOPÍA ELECTRÓNICA



J Antimicrob Chemother
doi:10.1093/jac/dkz293

Bayston *et al.*



Pelegrín I, Nottingham University

Dificultades en el tratamiento de las infecciones asociadas a dispositivos

1. Biofilm

2. MO multiR

3. Falta de inflamación en BHE

Dismunición de la [ ] de ATB en LCR

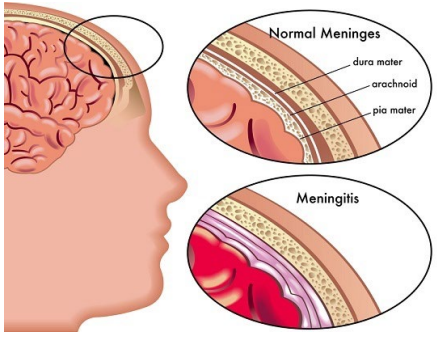


TABLA 2. Agentes etiológicos aislados en infecciones de *shunts*

Microorganismos	Porcentaje
Cocos grampositivos	65-85
*Staphylococcus epidermidis**	32-78
Staphylococcus spp. coagulasa negativos*	38-39
*Staphylococcus aureus**	11-38
Streptococcus spp.	5
Enterococcus spp.	1,4
Bacilos gramnegativos	10-25
Escherichia coli	5
Pseudomonas aeruginosa	5
Klebsiella pneumoniae	5
Enterobacter spp.	2
Acinetobacter baumannii	2
Bacterias anaerobias	3-15
Propionibacterium acnes	3-20
Otros	3
Bacillus spp.	1,5
Corynebacterium spp.	1,5
Hongos	4-17
Candida spp.	1-11
Aislamientos polimicrobianos	10-15

*El 50% de ellos son resistentes a meticilina.

Enferm Infecc Microbiol Clin 2008;26(4):240-51

Table 1. Factors influencing antibiotic concentrations in CSF.

Factor(s) [reference]	Example	Effect
Drug lipophilicity [21–23]	Fluoroquinolones Rifampin	Rapid entry into CSF Relatively good CSF concentrations, $T^{1}/_{2}$ similar to serum
High degree of ionization [21, 23]	β-Lactam antibiotics	Low lipid solubility, poor penetration through BBB
High serum protein binding [24]	Ceftriaxone	Delayed entry into CSF, long CSF and serum $T^{1}/_{2}$
Active transport system [25–27]	Penicillin	Relatively rapid entry into CSF, short duration of effective CSF levels
Inflammation [21–23, 28–30]	Meningitis	Increased penetration of hydrophilic agents (minimal effect on

CLINICAL MICROBIOLOGY REVIEWS, Oct. 2010, p. 858–883

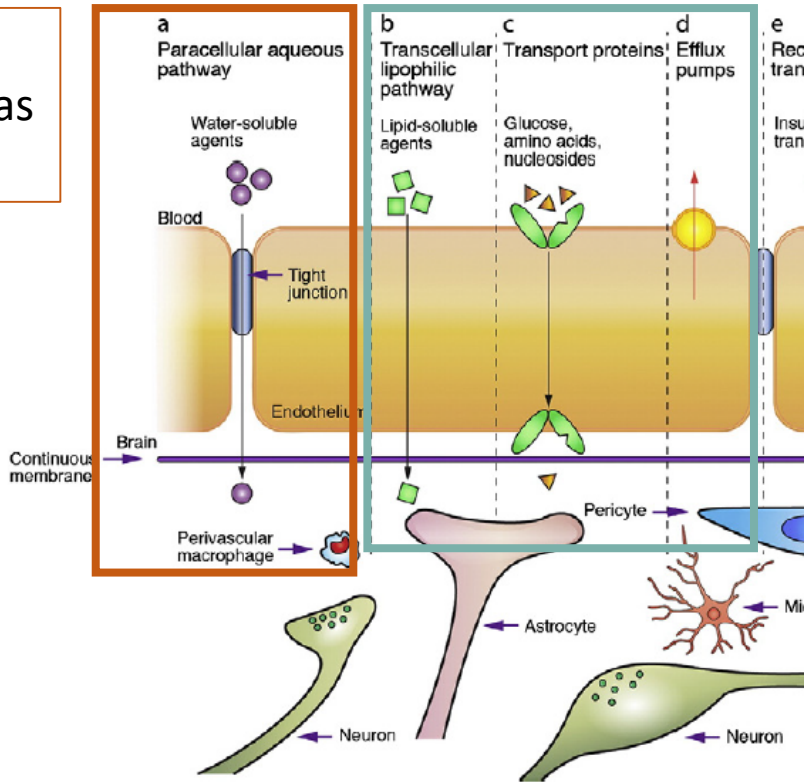
Penetración en LCR de diferentes antibióticos con meninge inflamada/ no inflamada

	ATB	Meninge inflamada	Meninge no inflamada	Hidrosoluble/lipo soluble
Betalactámicos	Penicilina	20%	2%	H
	Cefalosporinas	15%	0.7-1%	H
	Meropenem	39%	4.7-21%	H
Varios	Fluorquinolonas	70-90%	30-70%	L
	Linezolid	-	90%	L
	Metronidazol	87%	-	L
	Rifampicina	-	22%	L
	Vancomicina	30%	15%	H
	Cotrimoxazol			L
	Sulfametoxazol	42-51%	18%	
	Trimetroprim	24-30%	12%	

CLINICAL MICROBIOLOGY REVIEWS, Oct. 2010, p. 858–883

Penetración en LCR de diferentes antibióticos

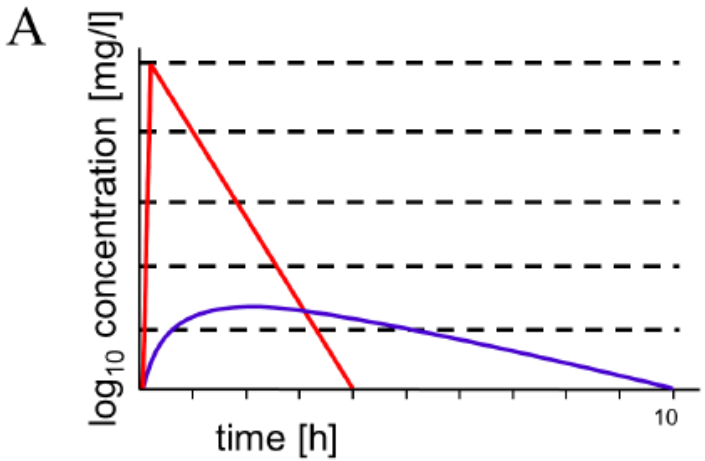
ATB hidrofílicos
Moléculas hidrofílicas y pequeñas



Y. Chen, L. Liu / Advanced Drug Delivery Reviews 64 (2012) 640–665

ATB lipofílicos
Bajo peso molecular
Forma no ionizada

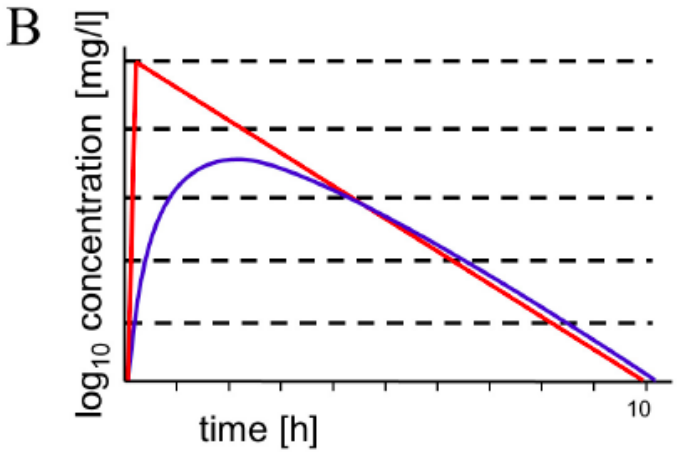
ATB hidrofílicos



Curvas concentración/tiempo en serum rojo y en LCR (azul)

Penetración ≠Eficacia

ATB lipofílicos



Curvas concentración/tiempo en serum rojo y en LCR(azul)

Antibiotics **2024**, *13*, 58

Clinical Infectious Diseases

IDSA GUIDELINE

2017 Infectious Diseases Society of America's Clinical Practice Guidelines for Healthcare-Associated Ventriculitis and Meningitis*

Allan R. Tunkel,[1] Rodrigo Hasbun,[2] Adarsh Bhimraj,[3] Karin Byers,[4] Sheldon L. Kaplan,[5] W. Michael Scheld,[6] Diederik van de Beek,[7] Thomas P. Bleck,[8] Hugh J. L. Garton,[9] and Joseph R. Zunt[10]

CID 2017:64 (15 March) • Tunkel et al

Inicio rápido de tratamiento ATB empírico

+

Retirada/recambio drenaje

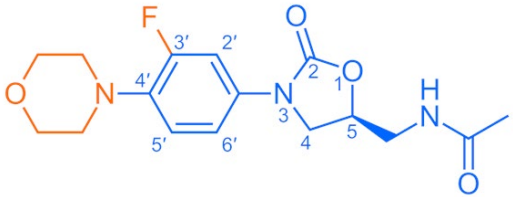
Vancomicina 1g/12-8h ev + Meropenem 2g/8h ev
(Ceftazidima 2g/8h ev o Cefepime 2g/8h ev)
Si alergia a betalactámicos confirmada:
Aztreonam 2g/8h ev

Duración tratamiento antibiótico 10-14 días

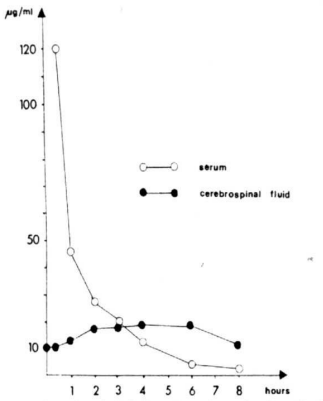
SCN	10-14d
SA	14d
BGN	14-21d

Estrategias para optimización de la exposición antibiótica

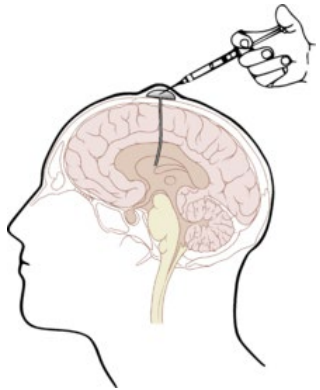
Linezolid/ nuevos fármacos



Ajuste de dosis/posología



Tratamiento intraventricular



Linezolid for therapy of *Staphylococcus aureus* meningitis: a cohort study of 26 patients

INFECTIOUS DISEASES, 2020; VOL. 0, NO. 0, 1–8

Vicente Pintado[a], Rosario Pazos[a,b], Manuel Enrique Jiménez-Mejías[c], Azucena Rodríguez-Guardado[c], Beatriz Díaz-Pollán[e], Carmen Cabellos[f], Juan Manuel García-Lechuz[g,h], Jaime Lora-Tamayo[i], Pere Domingo[j], Elena Muñez[k], Diego Domingo[l], Fernando González-Romo[m], José Antonio Lepe-Jiménez[c], Carlos Rodríguez-Lucas[d], Eulalia Valencia[e], Iván Pelegrín[f], Fernando Chaves[n], Virginia Pomar[j], Antonio Ramos[k], Teresa Alarcón[l] and Elisa Pérez-Cecilia[m]

- 350 meningitis SA
- 26 pacientes, 83% nosocomial, 50% dispositivo
- 10 pacientes empírico, 10 dirigido y 6 de rescate de vancomicina
- Mortalidad con vancomicina: Linezolid 9% vs 20% vancomicina (p=0.16)
- Efectos adversos 14%, STOP 1 paciente.

International Journal of Antimicrobial Agents 44 (2014) 409–415

Contents lists available at ScienceDirect

International Journal of Antimicrobial Agents

journal homepage: http://www.elsevier.com/locate/ijantimicag

Plasma and cerebrospinal fluid concentrations of linezolid in neurosurgical critically ill patients with proven or suspected central nervous system infections

S. Luque[a], S. Grau[a,b], F. Alvarez-Lerma[c], O. Ferrández[a], N. Campillo[a], J.P. Horcajada[d], M. Basas[c], J. Lipman[e,f], J.A. Roberts[e,f,*]

11 pacientes neurocríticos con DVE afectos de infección neuroquirúrgica

Medición de niveles Linezolid plasma y LCR

$AUC_{csf}/AUC_{blood} = 0.77$

Variabilidad de niveles entre pacientes

IDSA GUIDELINE

Table 1. Recommended Antimicrobial Therapy in Patients With Healthcare-Associated Ventriculitis and Meningitis Based on Isolated Pathogen and In Vitro Susceptibility Testing

Microorganism	Standard Therapy	Alternative Therapies
Staphylococci[a]		
Methicillin sensitive	Nafcillin or oxacillin	Vancomycin
Methicillin resistant	Vancomycin	Daptomycin, trimethoprim-sulfamethoxazole, or linezolid
Propionibacterium acnes	Penicillin G	Third-generation cephalosporin,[b] vancomycin, daptomycin, or linezolid

ESCMID

Clinical Microbiology and Infection 30 (2024) 66–89

Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com

Guidelines

European society of Clinical Microbiology and Infectious Diseases guidelines on diagnosis and treatment of brain abscess in children and adults

Jacob Bodilsen [1, 2, 3, *], Quintino Giorgio D'Alessandris [4, 5], Hilary Humphreys [6], Mildred A. Iro [7], Matthias Klein [3, 8, 9], Katharina Last [3, 10], Inmaculada López Montesinos [11, 12], Pasquale Pagliano [3, 13, 14], Oğuz Reşat Sipahi [3, 15, 16], Rafael San-Juan [12, 17, 18], Pierre Tattevin [3, 19], Majda Thurnher [20], Rogelio de J. Treviño-Rangel [21, 22, 23, 24], Matthijs C. Brouwer [3, 25], for the ESCMID Study Group for Infections of the Brain (ESGIB)

We conditionally recommend meropenem combined with vancomycin or linezolid for empirical treatment of post-neurosurgical brain abscess.	**Conditional**	**Low**

Vancomycin should be used if infection is caused by methicillin-resistant *S. aureus* (MRSA). If the patient is infected with MRSA strains that have a vancomycin MIC of ≥1 μg/mL, linezolid, daptomycin, or trimethoprim-sulfamethoxazole should be considered [96]. If staph-

Tratamiento individualizado

Toxicidad hematológica (>14días)
Resistencia (SCN linezolid R)

antibiotics

MDPI

Review

New Antibiotics for the Treatment of Nosocomial Central Nervous System Infections

Roland Nau [1,2,*], Jana Seele [1,2] and Helmut Eiffert [1,3]

- Cefiderocol
- Ceftolozano/tazobactam
- Ceftazidima/avibactam
- Dalbavancina
- Oritavancina
- Tedizolid

REVIEW

Dose optimisation of antibiotics used for meningitis

Aaron J. Heffernan[a,b] and Jason A. Roberts[a,c,d]

Betalactámicos

[ ]peak en LCR ≥ 10 CMI para el mo

Estudios en enfermos críticos con betalactámicos en perfusión extendida/continua T100%>CMI

En SNC estudios contradictorios
Cinética en LCR es diferente
No está claro el uso óptimo

Controversia

Tratamiento intraventricular

- Uso no aprobado por FDA

IDSA GUIDELINE

- En situaciones clínicas especiales:
  - Fracaso clínico y/o microbiológico.
  - Gérmenes multirresistentes que no tengan un buen tratamiento ATB

  ([ ] no elevadas de ATB frente a una MIC alta).

- Uso combinado ev + IT: rápida esterilización y curación microbiológica.

- Neurotoxicidad

- Ajuste de dosis y monitorizar niveles

Table 3 Common Intraventricular/Intrathecal Treatment Options

Drug	Recommended Adult Daily Dose[#2]	Loading Dose Suggested	Adverse Events Reported[136]	Targeted Pathogens[2,136]
Amikacin	5–50mg	–	Transient hearing loss, seizures, chemical meningitis, radiculopathy (IT)	DTR Gram-negatives
Colistin	10mg	40mg	Chemical meningitis, seizures	DTR Gram-negatives
Daptomycin	5mg	–	Limited data available	Gram-positives non-responding to systemic treatment
Gentamycin	4–8mg	–	Equivalent to amikacin	DTR Gram-negatives
Polymyxin B	5mg	–	Equivalent to colistin	DTR Gram-negatives
Tigecycline*[176]	4–8mg	–	None attributed to the drug	DTR Gram-negatives, especially if colistin-resistant as well; potentially VRE[177]
Tobramycin	5–20mg	–	Equivalent to amikacin	DTR Gram-negatives
Vancomycin	5–20mg	–	CSF pleocytosis, headache	Gram-positives non-responding to systemic treatment

Notes: *Limited data available. #Apart from tigecycline, according to Infectious Disease Society of America recommendations.[2]
Abbreviations: CSF, cerebrospinal fluid; DTR, difficult-to-treat resistant; IT, intrathecal; VRE, vancomycin-resistant enterococci.

Review

Clinical Experience with Off-Label Intrathecal Administration of Selected Antibiotics in Adults: An Overview with Pharmacometric Considerations

Anouk E. Muller [1,2,3,*], Peter van Vliet [4] and Birgit C. P. Koch [3,5]

Tamaño del sistema ventricular

Normal: 250-326ml
Hidrocefalia comunicante: 488ml
Hidrocefalia no comunicante: 593ml

Intraventricular/intralumbar

[ ] diferentes en LCR ventrículo y LCR lumbar

Flujo de drenaje (ml/día)

1 dosis diaria si drenaje normal

Clampaje DVE 30-120 min

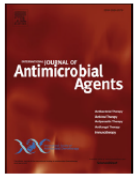
Antibiotics 2023, *12*, 1291.

International Journal of Antimicrobial Agents 63 (2024) 107033

Contents lists available at ScienceDirect

International Journal of Antimicrobial Agents

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



18 estudios retrospectivos
602 pacientes con meningitis/ventriculitis postqx por BGN

Review

Intrathecal or intraventricular antimicrobial therapy for post-neurosurgical Gram-negative bacillary meningitis or ventriculitis: a systematic review and meta-analysis

Meng-Ting Li[a,†], Qi-Quan Wu[b,†], Jia-Bao Li[a], Ji-Sheng Chen[a,*]

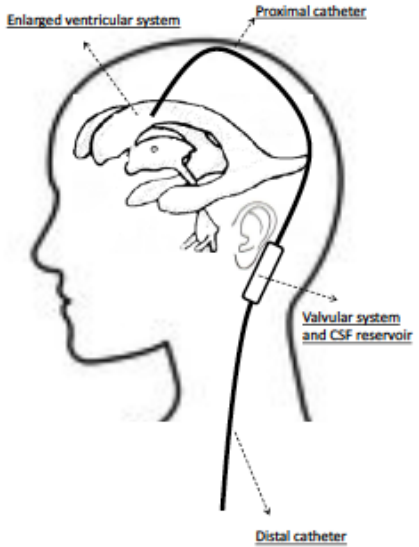
Endpoint primario:
Mortalidad 30d
Aclaramiento LCR al final del tratamiento
Efectos adversos raros

Tratamiento endovenoso+intratecal

<mortalidad OR 0.30 (0.19-0.47), especialmente BGN XDR 0.15 (0.08-0.28)
Efectos adversos aceptables (meningitis/ventriculitis)
Aclaramiento microbiológico mayor en BGN XDR

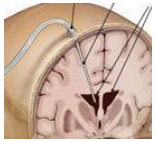
Reduce los signos clínicos de meningitis (fiebre, rigidez nucal y mejora GCS)

Infecciones asociadas a drenaje ventriculoperitoneales



Manejo de las infecciones de DVP

Vancomicina 15-20mg/Kg + Betalactámico antipseudomónico



OA — Sólo ATB

SR — Retirada de shunt + ATB

OSSR — Exteriorización del catéter distal
Esterilización del LCR con ATB
Una vez estéril, recambio de shunt en 1 tiempo quirúrgico

TSSR — Retirada del shunt infectado
+/- DVE +ATB
Implantación de nuevo dispositivo una vez que LCR estéril

OA

Shunt dependiente?

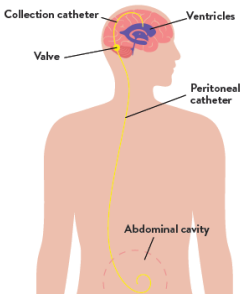
- YES
  - OSSR
  - TSSR
- NO
  - SR

Clinical Infectious Diseases

MAJOR ARTICLE

Management of Ventriculoperitoneal Shunt Infections in Adults: Analysis of Risk Factors Associated With Treatment Failure

Iván Pelegrín,[1] Jaime Lora-Tamayo,[1,2] Joan Gómez-Junyent,[1] Nuria Sabé,[1] Dolors García-Somoza,[3] Andreu Gabarrós,[4] Javier Ariza,[1] Pedro Fernández Viladrich,[1] and Carmen Cabellos[1]



Cohorte de 108 pacientes adultos con infección de shunt VP desde 1980 a 2014

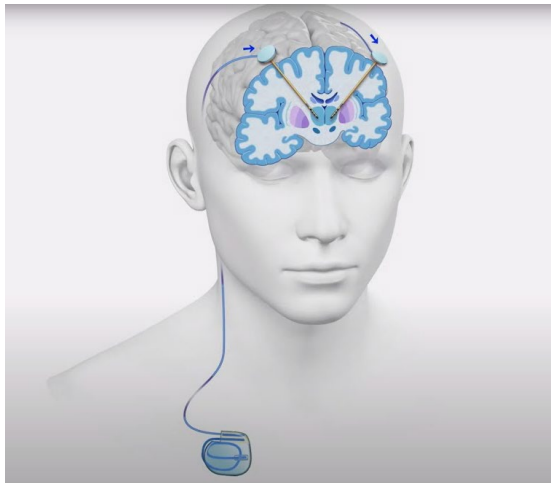
2017; 64:989-97

análisis de 86 estrategias

Retirada del shunt infectado se asoció a un mejor pronóstico

La retirada de shunt VP, particulararmente TSSR cuando el paciente es shunt dependiente, permanece la opción óptima de tratamiento y no aumenta la morbilidad.

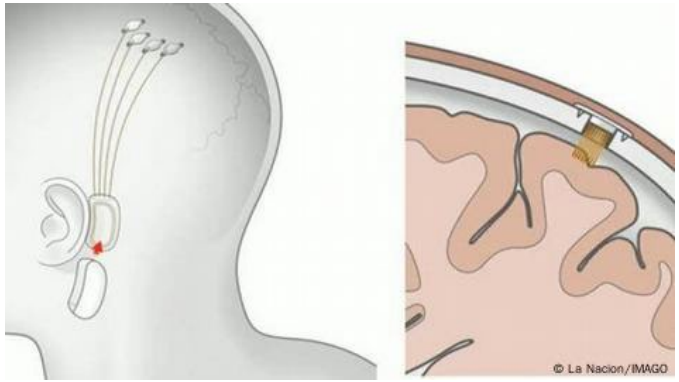
Infecciones asociadas a neuroestimuladores corticales/cerebrales profundos



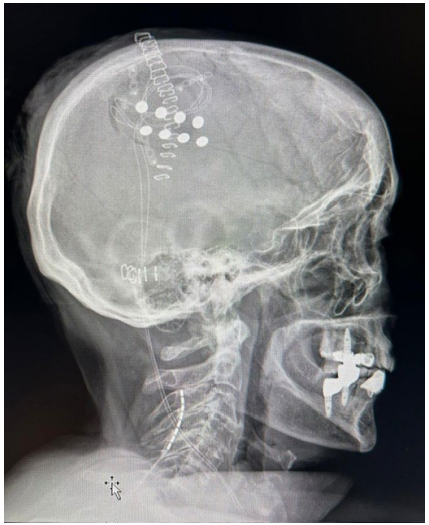
NEURALINK >

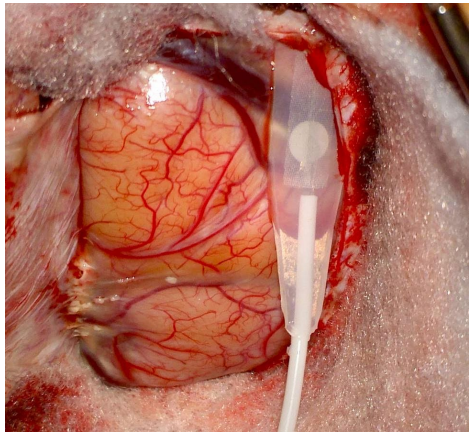
La firma Neuralink, de Elon Musk, probará implantes cerebrales para mover brazos robóticos

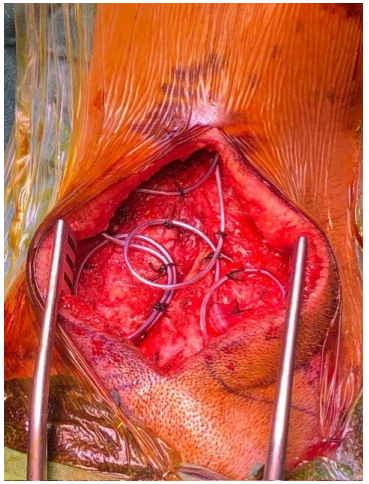
El objetivo de la tecnología es permitir utilizar extremidades mecánicas a personas con paraplejia

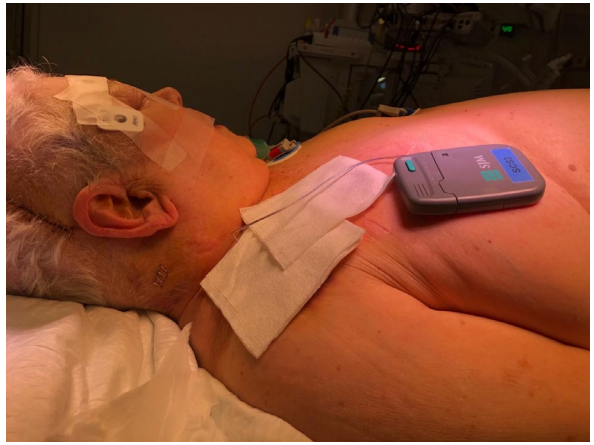


Neuroestimuladores corticales





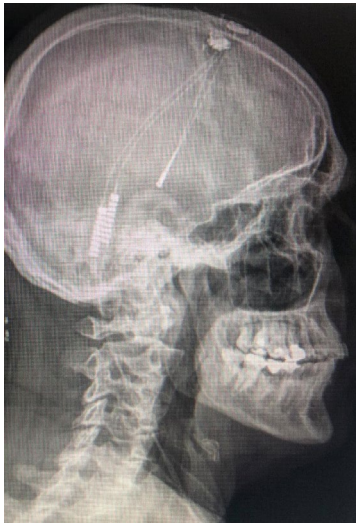


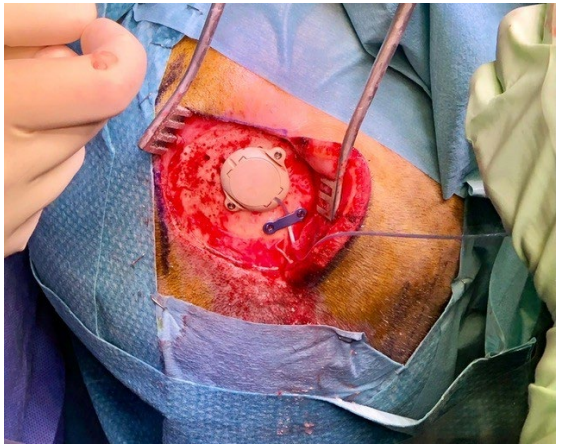


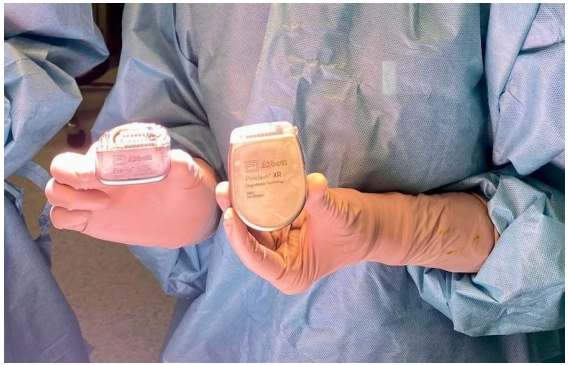
- Colocación puede ser en 1T o en 2T(electrodo y generador por separado)

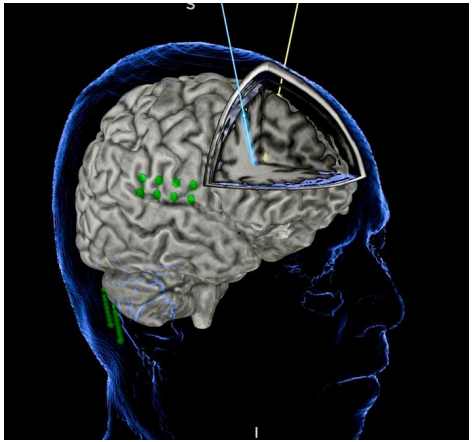
Imágenes cortesía de Dra Gloria Villalba

Estimuladores cerebrales profundos









- Abordaje ideal: retirada dispositivo + ATB
- Dificultad en algunos casos en retirar el dispositivo

Imágenes cortesía de Dra Gloria Villalba

Open Forum Infectious Diseases

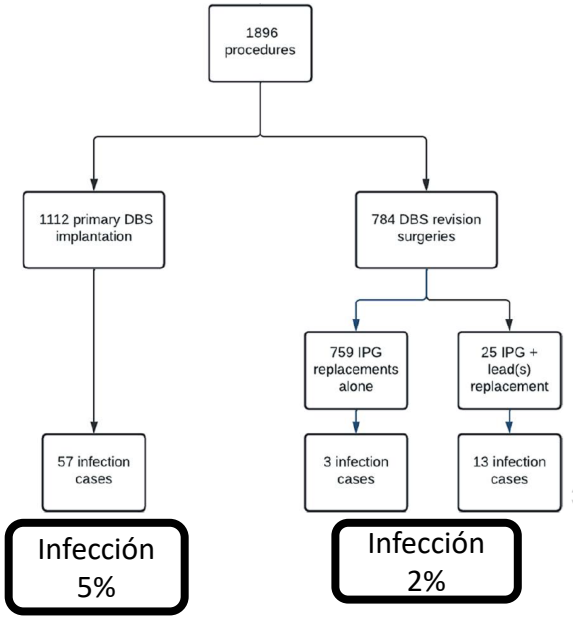
MAJOR ARTICLE

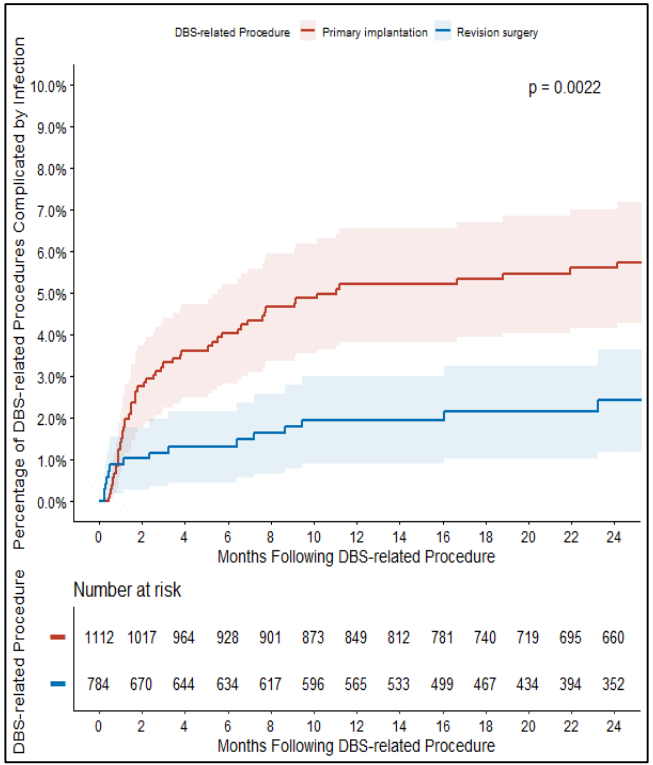
Deep Brain Stimulator Device Infection: The Mayo Clinic Rochester Experience

Hussam Tabaja,[1] Jason Yuen,[2] Don Bambino Geno Tai,[1] Cristina Corsini Campioli,[1] Supavit Chesdachai,[1] Daniel C. DeSimone,[1,3] Anhar Hassan,[4] Bryan T. Klassen,[4] Kai J. Miller,[2] Kendall H. Lee,[2] and Maryam Mahmood[1]

[1]Division of Public Health, Infectious Diseases and Occupational Medicine, Department of Medicine, Mayo Clinic, Rochester, Minnesota, USA, [2]Department of Neurologic Surgery, Mayo Clinic, Rochester, Minnesota, USA, [3]Department of Cardiovascular Diseases, Mayo Clinic, Rochester, Minnesota, USA, and [4]Department of Neurology, Mayo Clinic, Rochester, Minnesota, USA

- Estudio retrospectivo en adultos con implantación/revisión DBS 2000-2020
- Tiempo de infección 2.1 (0.9-6.9 IQR) meses





- FR de infección: IMC, Duración IQ, Hombres, DM y edad joven
- Más infecciones en grupo 2T IQ pero p>0.05.
- No diferencias en pacientes con antibióticos tópicos (Bacitracina, vancomicina)

Table 4. Microbiology of DBS-Related Infections (n = 114)

Gram-Positive Pathogens	No. of Isolates (%)	Gram-Negative Pathogens	No. of Isolates (%)
S. aureus	39 (34.2)	*Citrobacter koseri*	2 (1.8)
• Methicillin resistant	4	*P. aeruginosa*	2 (1.8)
• Methicillin susceptible	35	*K. aerogenes*	2 (1.8)
CoNS	31 (27.2)	*Klebsiella pneumoniae*	1 (0.9)
• S. epidermidis	11	*Serratia marcescens*	1 (0.9)
• S. capitis	11	*S. maltophilia*	1 (0.9)
• S. lugdunensis	2		
• S. hominis	1		
• S. intermedius	1		
• S. devriesei/ haemolyticus	1		
• Other CoNS	4		
C. acnes	27 (23.7)		
Streptococcus viridans group	1 (0.9)		
S. agalactiae	1 (0.9)		
Bacillus spp.	1 (0.9)		
C. amycolatum	1 (0.9)		
C. kroppenstedtii	1 (0.9)		
Peptoniphilus	1 (0.9)		
E. faecalis	1 (0.9)		
Finegoldia magna	1 (0.9)		

Infections	n (%)
Superficial	17 (23%)
Deep uncomplicated	53 (73%)
Deep complicated	3 (4%)
Total	73

1 Cerebritis
1 Brain abscess
1 Pus intracraneal electrodes

Table 1. Definition of DBS-Related Infection

Depth of DBS-Related Infection	Definition
1. Superficial skin and soft tissue infection related to DBS	A patient is considered to have superficial DBS-related SSTI if ≥2 of the following signs are present around the DBS parts: skin erythema, skin swelling, tenderness, wound dehiscence, and wound drainage; with or without positive intraoperative wound cultures AND no evidence of deep infection as defined below. Infection must involve parts overlying the DBS components to be considered related to the DBS device.
2. Deep uncomplicated DBS-related infection	A patient is considered to have deep uncomplicated DBS-related infection if any of the following is present: 1. Device exposure to the outside or sinus tract communicating with the device. 2. Deep purulent collection surrounding DBS parts detected intraoperatively or by ultrasound-guided needle aspiration. 3. Positive growth of microorganisms in cultures from any of the following: (a) Deep intraoperative tissue or fluid surrounding DBS parts; (b) DBS device parts; (c) Deep fluid aspirate from IPG pocket; AND no evidence of complications as defined below.
3. Deep complicated DBS-related infection	A patient is considered to have deep complicated DBS-related infection if criteria for deep uncomplicated are met AND they have evidence of ≥1 of the following: intracranial pus, intracranial organized abscess, meningitis, or encephalitis.[a]

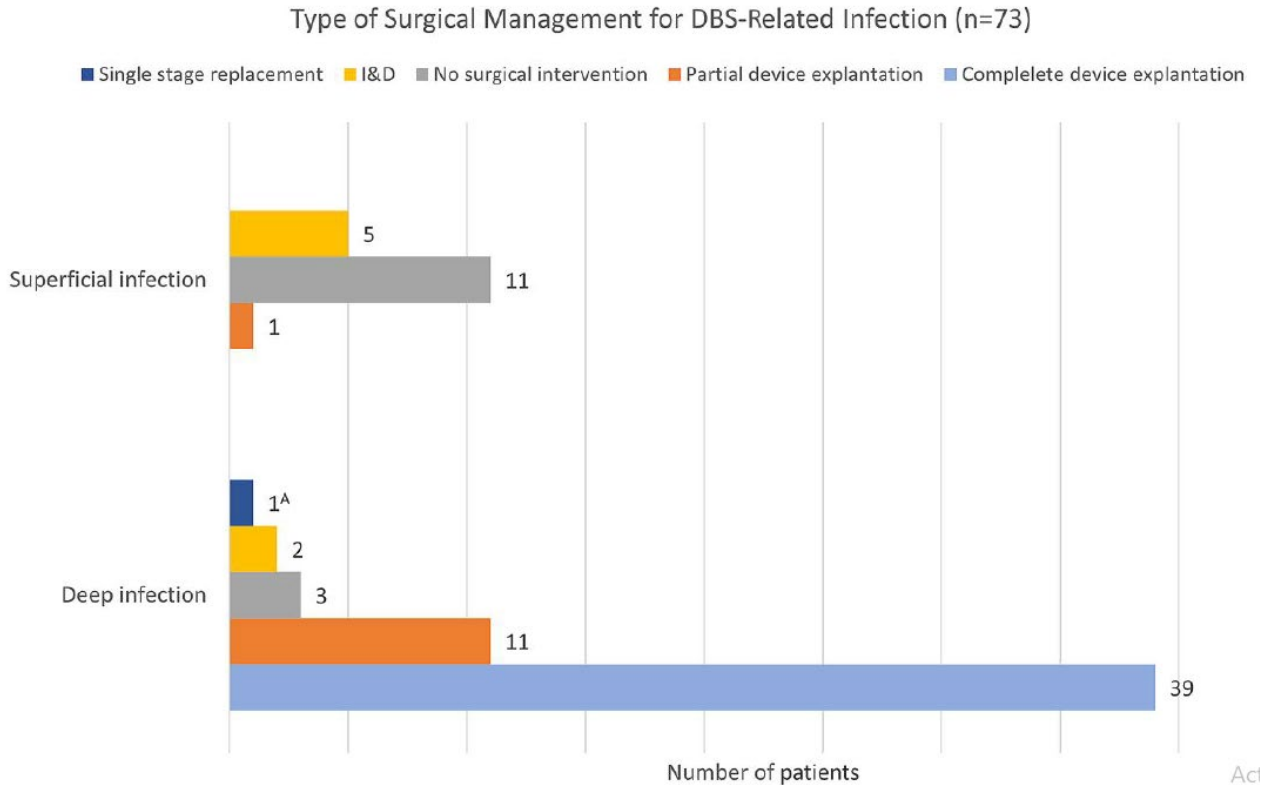
Abbreviations: DBS, deep brain stimulator; SSTI, skin and soft tissue infection.

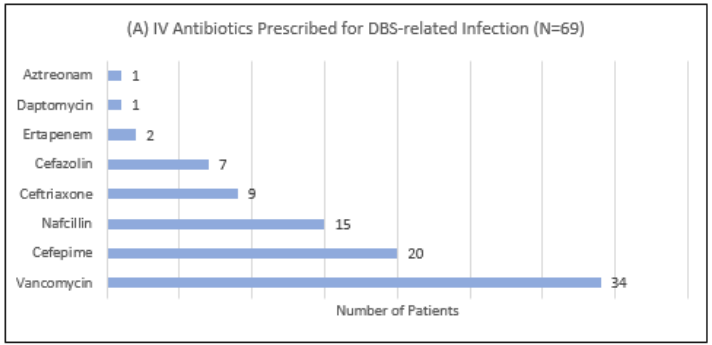
[a]Growth of microorganisms in cultures from intracranial leads in the absence of intracranial pus, intracranial organized abscess, meningitis, or encephalitis is considered deep

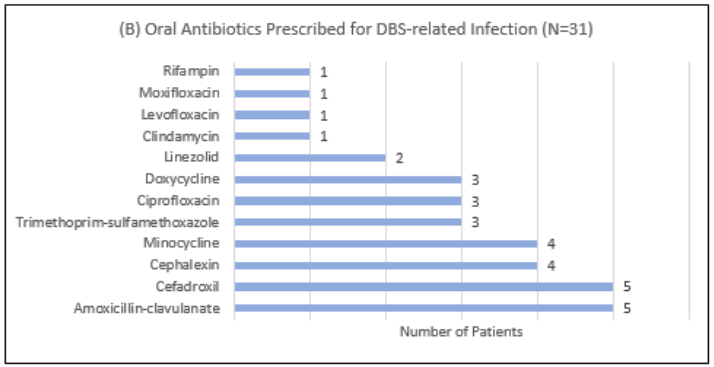
Table 2. Device Management Groups

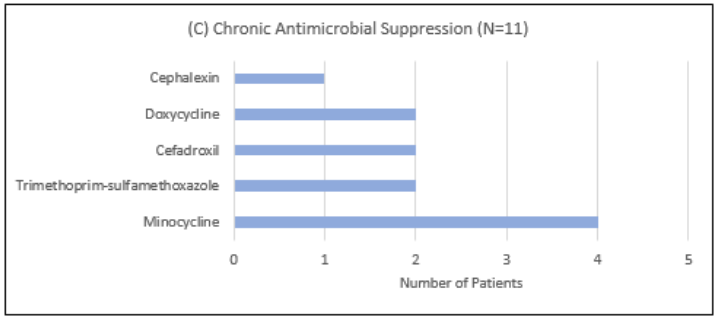
Device Management	Definition
1. Medical management	Antimicrobial therapy alone without surgical intervention.
2. Complete device explantation	Removal of the entire DBS system at time of presentation.
3. Surgical intervention with device retention	Complete or partial retention or immediate replacement of DBS parts at time of presentation. Such as with: (a) Incision and debridement. (b) Single-stage replacement, defined as immediate replacement of infected DBS part(s) with new part(s). (c) Partial device explanation, defined as removal of grossly infected part(s) with retention of other DBS parts.

Infections	Time ATB Md (IQR) days
Superficial	14 (11-16)
Deep	15 (14-21)

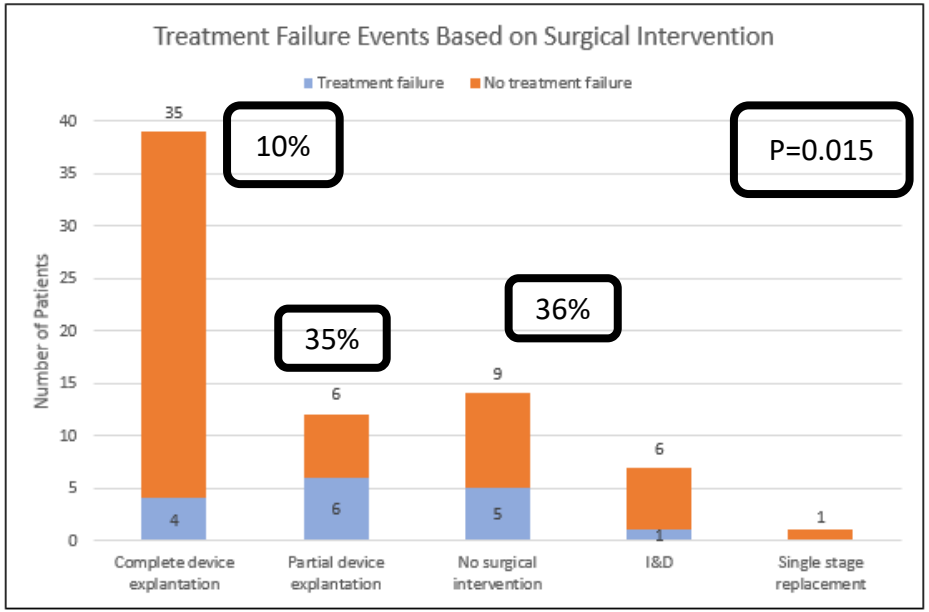








Supplementary Figure 3. Antibiotics prescribed for DBS-related infections.

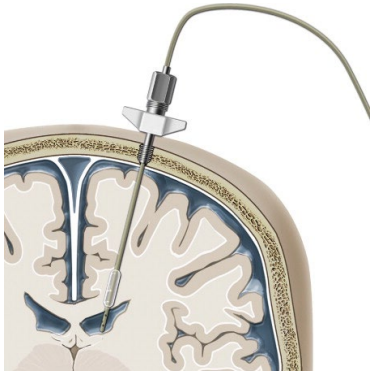


Supplementary Figure 4. Number of treatment failure events occurring after each surgical intervention type.

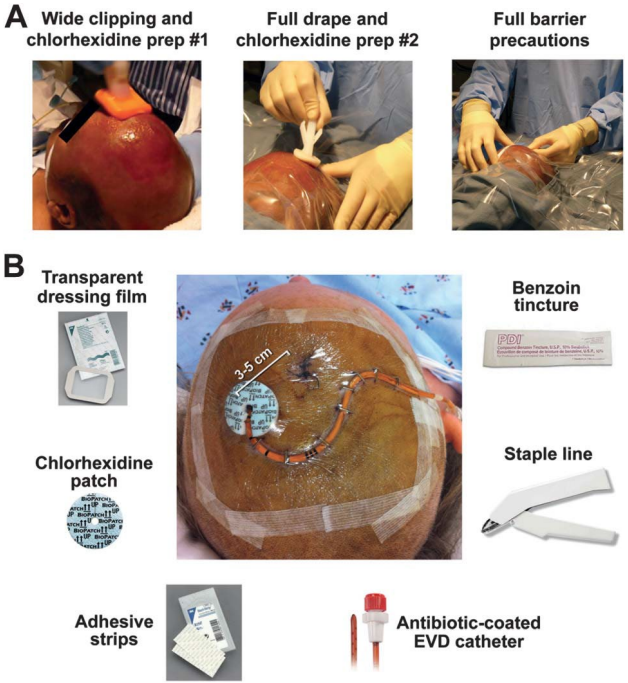
Abbreviations: I&D: incision and drainage.

- Reimplantation:
  - Complete explantation: 2.9 (IQR 2.1-5.1) months
  - Partial explantation: 2.3 (1.4-6.8) months

Prevención de infecciones asociadas a dispositivos



Care bundles



Journal of Hospital Infection 117 (2021) 37–43

Available online at www.sciencedirect.com

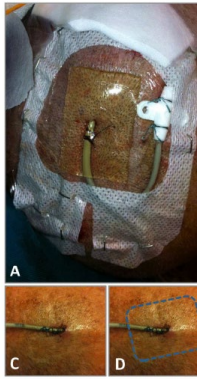
Journal of Hospital Infection

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

Review

Chlorhexidine dressings could reduce external ventricular drain infections: results from a systematic review and meta-analysis

M. Waqar [a,b,*], A. Chari [c,d], A.I. Islim [e,f], B.M. Davies [g], D.M. Fountain [a,b], S. Larkin [h], M.D. Jenkinson [e,f], H.C. Patel [a,b]



IDSA GUIDELINE

- Recambio profiláctico del DVE ❌
- Toma de muestras para monitorización ❌
- Profilaxis antibiótica ampliada ❌
- Profilaxis antibiótica en la colocación ✅

EXPERT REVIEW OF ANTI-INFECTIVE THERAPY
https://doi.org/10.1080/14787210.2020.1717949

Tipos de drenajes ventriculares externos impregnados

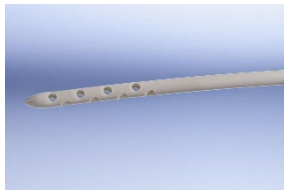
Drenajes con nanopartículas de plata

Silverline

Drenajes impregnados con ATB

1.Bactiseal (Rifampicina 0.15% +clindamicina 0.054%)

2. Ventriclear (Rifampicina+minociclina)



0.15%

0.054%

IDSA GUIDELINE

International Journal of Molecular Sciences

MDPI

Review

Prevention of Ventriculostomy Related Infection: Effectiveness of Impregnated Biomaterial

Sylvain Diop [1,*], Ariane Roujansky [2], Hatem Kallel [2,3] and Roman [1]

Int. J. Mol. Sci. **2023**, *24*, 4819

Antibiotic or silver versus standard ventriculoperitoneal shunts (BASICS): a multicentre, single-blinded, randomised trial and economic evaluation

Conor L Mallucci, Michael D Jenkinson*, Elizabeth J Conroy, John C Hartley, Michaela Brown, Joanne Dalton, Tom Kearns, Tracy Moitt, Michael J Griffiths, Giovanna Culeddu, Tom Solomon, Dyfrig Hughes, Carrol Gamble, for the BASICS Study collaborators†*

	Standard shunt	Antibiotic shunt	Silver shunt	Total
Surgeries				
Patients eligible for primary outcome*	533	535	526	1594
No shunt removal or revision	403 (76%)	403 (75%)	390 (74%)	1196 (75%)
Shunt removal or revision (for any cause)	130 (24%)	132 (25%)	136 (26%)	398 (25%)
Reason for revision as classified by central review				
Patients revised for infection	32 (6%)	12 (2%)	31 (6%)	75 (5%)

Lancet 2019; 394: 1530–39

Conclusiones

- Las infecciones asociadas a dispositivos en SNC son infecciones de difícil manejo que obligan a realizar un tratamiento individualizado

- Existen nuevas estrategias en el manejo de las infecciones asociadas a dispositivos, no incluidas en las guías actuales, como el uso de linezolid, el ajuste de dosificación y posología y el tratamiento intraventricular

- Existen nuevas estrategias centradas en prevención de las infecciones asociadas a dispositivos como los drenajes impregnados en antibióticos

• imagen:lacabezaenlasnubes.com