Infezioni Periprotesiche

Libera traduzione e interpretazione
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Le 100 risposte in pillole

a cura del dott. Nicolò Castelnuovo

Workgroup 1: Mitigation and Education [1-107]

Quali sono i fattori di rischio d'infezione periprotesica?

- Presenza d'infezione sistemica o locale in altra sede
- Precedente intervento chirurgico nella stesa sede
- Diabete scompensato
- Malnutrizione
- Obesità (BMI>30)
- Fumo (< 20 sigarette/die)
- Abuso alcolico
- tossicodipendenza
- Insufficienza renale cronica
- Epatite B o C cronica
- Hiv
- Immunodepressione
- Pregressa prolungata ospedalizzazione (RSA)

Qual è il ruolo dell'igiene orale dei pazienti candidati a sostituzione protesica?

- Tutti i pazienti dovrebbero subire uno scerni per la ricerca d'infezioni attive orali.

Nei pazienti candidati a sostituzione protesica, va eseguito lo screening sistematico per la ricerca di MRSA e MSSA?

- No

Nei pazienti trovati positivi per MRSA e MSSA, che terapia va seguita?

- Terapia a breve termine con muciprocina topica (nasale)

Negli operatori sanitari va eseguito lo screening sistematico per la ricerca di MRSA e MSSA?

- No, vanno ricercati solo nei pazienti sintomatici.

Qual è il ruolo dell'urinocoltura nei pazienti candidati a sostituzione protesica?

- Non di uso routinario, ma va riservata ai pazienti sintomatici o con anamnesi positiva.

Nei pazienti con AR o altre patologie autoimmuni, quando e se va sospesa la terapia?

- La terapia va sempre sospesa con le seguenti tempistiche.
  - FANS : 1 settimana prima dell'intervento
  - METHOTREXATRE: 1 settimana prima dell'intervento
  - SULFALAZINA: 1 settimana prima dell'intervento
  - AZATHIOPRINA: 1 settimana prima dell'intervento
  - LEFLUNOMIDE: 6 settimane prima dell'intervento
  - HYDROXYCHLOROCHINA: non sospendere
  - ETANERCEPT: 12 giorni prima dell'intervento
  - INFIXIMAB: 3 settimane prima dell'intervento
  - RITUXIMAB: 3 settimane prima dell'intervento
  - ALLOPURINOLO: 1 settimana prima dell'intervento
  - COLCHICINA: 1 settimana prima dell'intervento
  - PROBENECID: 1 settimana prima dell'intervento

Quali procedure vanno intraprese per minimizzare il rischio d'infezione nei pazienti con storia clinica di pregressa artrite settica?

- Va assolutamente eseguito screening sierologico ed esame colturale da artrocentesi.
- Va usato cemento con antibiotico
- Vanno eseguiti esami colturali i intraoperatori.
- Se positivi, va intrapresa una terapia antibiotica post-operatoria secondo indicazioni infettivologo

Workgroup 2: Preoperative Skin Preparation [108-145]

Che ruolo ha la detersione della cute con antisettico nel pre-operatorio?

- La cute dell'intera superficie corporea e non solo quella del sito chirurgico vanno deterse con Gluconato di Clorexidina o altro detergente analogo la sera precedente l'intervento chirurgico

Che ruolo ha la tricotomia?

- Clipping è il metodo più idoneo e va eseguito il più tardi possibile

Che fare in caso di ferita o ulcerazione cutanea nei pressi del sito chirurgico?

- L'intervento va riprogrammato alla guarigione della lesione

Qual è l'idoneo metodo di lavaggio delle mani dell'equipe operatoria?

- Il chirurgo, gli assistenti e la strumentista devono eseguire un accurato lavaggio delle mani per almeno 2 minuti prima della prima procedura; negli interventi successivi tale tempistica può accorciarsi
- Nessuna differenza su quale agente detergente utilizzare

Workgroup 3: Perioperative Antibiotics [146-204]

Qual è il timing ottimane per la somministrazione degli antibiotici?

- La profilassi antibiotica va eseguita entro 1 ora dall'inizio dell'intervento (2 ore per Vancomicina o Fluorochinolonici)

Qual è l'antibiotico di scelta?

- Cefalosporina di prima o seconda generazione (Cefazolina o Cefuroxime)

Qual è l'antibiotico di scelta nei pazienti portatori di protesi valvolari?

- Cefalosporina di prima o seconda generazione (Cefazolina o Cefuroxime)

Qual è l'antibiotico da utilizzare se le cefalosporine sono controindicate?

- Teicoplanina o vancomicina

In quali pazienti la Vancomicina deve essere considerata come antibiotico di prima scelta nella profilassi?

- Pazienti allergici alla penicillina
- Pazienti che vivono in regioni ad alta prevalenza di germi MRSA
- Pazienti ospedalizzati, che vivono in RSA o accuditi da ADI
- Pazienti in dialisi
- Pazienti che sono stati ricoverati in passato in terapia intensiva
- Operatori sanitari

Può la Vancomicina essere sempre considerata l'antibiotico di prima scelta nella profilassi?

- No

Che ruolo ha la profilassi con doppio antibiotico (Cefalosporina + Vancomicina o amino glicoside)?

- Nessuno

Qual è l'antibiotico di prima scelta nei pazienti cateterizzati o con esame colturale positivo?

- In caso di infezione vie urinaria sintomatica, questa va trattata con successo prima di potersi sottoporre all'intervento
- In caso di batteriuria asintomatica, si deve procedere alla sola profilassi preoperatoria routinaria con cefalosporina

Come comportarsi in caso di pregressa artrite settica:

- Utilizzare un antibiotico attivo sul germe responsabile della precedente infezione
- Utilizzare cemento antibiotato

La terapia antibiotica va protratta in caso di cateterismo vescicale o in presenza di drenaggio dal sito chirurgico?

- No, ma il drenaggio e il catetere vanno rimossi il prima possibile

Per quanto tempo va protratta la terapia antibiotica?

- Mai per più di 24 ore dopo l'intervento

In caso di presunta infezione quali antibiotici utilizzare?

- Nessuno fino all'esecuzione degli esami colturali
- Vancomicina e gentamicina in attesa del risultato dell'antibiogramma
- Vancomicina se infezione da Gram- positivi
- Cefalosporina di 3 o 4 generazione se infezione da Gram- negaitivi
- Vancomicina + Cefalosporina di 3 o 4 generazione se infezione mista

Qual è l'antibiotico di scelta nelle revisioni in Two-Stage

- Un antibiotico attivo sia sul germe responsabile dell'infezione primaria, sia sui comuni microorganismi infettanti

Nei casi di interventi di lunga durata, va somministrata una dose supplementare di antibiotico?

- Se l'interveto dura più di 2 ore, o con perdite ematiche superiori al 2000 cc o di infusione endovenosa di più di 2000 cc di liquidi, è indicata la somministrazione di una seconda dose di antibiotico

La dose di antibiotico da utilizzare, va modulata in base al peso del paziente?

- Sì la profilassi antibiotica deve essere correlata al peso del paziente

Cefazolina	< 60 kg	1 g	Ogni 4 ore	Profilassi primaria
	60-120 kg	2 g		
	> 120 kg	3 g		
Cefuroxime	Nessun aggiustamento	1,5 g	Ogni 4 ore	Profilassi primaria
Vancomicina		15 mg pro chilo	Ogni 12 ore	Pazienti MRSA positivi o allergici alla penicillina
Clindamicina	Nessun aggiustamento	900 mg	Ogni 3 ore	Pazienti allergici penicillina
Teicoplania	Nessun aggiustamento	400mg	NA	Pazienti MRSA positivi o allergici alla penicillina

In caso di megaprotesi e protesi da tumore, come va modificata la profilassi antibiotica?

- Si raccomanda di eseguire una profilassi primaria anche in caso di megaprotesi

In caso di pazienti immunodepressi, diabetici o affetti da AIDS, come va modificata la profilassi antibiotica?

- Si raccomanda di eseguire una profilassi primaria anche in pazienti immunodepressi, diabetici o affetti da AIDS

Come si modifica la profilassi antibiotica in caso di revisioni asettiche

- Si raccomanda di eseguire una profilassi primaria anche in caso di revisione asettica

Per quanto concerne la profilassi antibiotica c'è differenza tra di protesi d'Anca e di Ginocchio?

- No, la profilassi antibiotica in caso di protesi d'Anca e di Ginocchio è la medesima

Qual è l'antibiotico di scelta nella profilassi in pazienti con pregresse infezioni sostenute da gram-negativi carbapenemi-resistenti?

- ANCHE SE NON ACCORDO TRA I DELEGATI: si consiglia Colestina o Tigercyclina

Workgroup 4: Trattamento Chirurgico [205-245]

Esiste una relazione tra il numero dei germi presenti sul sito d'intervento e il rischio di contaminazione?

- Sì esiste una proporzione diretta tra SSI (Surgical sito Infection) e numero di germi presenti

Esiste una relazione tra il numero dei germi presenti in sala operatoria e il rischio di contaminazione?

- Sì, gli "airbone particulate bacteria" sono la principale fonte di SSI, soprattutto quelli veicolati dal personale di sala operatoria.

Quali sono i metodi per ridurre al minimo gli "airbone particulate bacteria" veicolati dal personale di sala operatoria?

- Si raccomanda di eseguire sempre gli interventi di sostituzione protesica in sale operatorie con "flussi laminari" efficaci, anche se letterature recente (ad esempio registro Nuova Zelanda) mettono in dubbio tal efficacia
- Nessun dato certo a supporto della reale utilità delle barriere personali quali i caschi sterili
- Si raccomanda di ridurre al minimo il numero di persone presenti o che transitano dalla sala operatoria
- Si raccomanda che le scialitiche NON siano manovrate Mai dai chirurghi
- L'uso di luce ultravioletta riduce il rischio di infezione anche se con effetti collaterali sul personale di sala operatoria
- Tutto il personale di sala operatoria deve indossare sempre e correttamente la mascherina, la cuffia, la divisa e le calzature idonee.

- Si sconsiglia l'uso di dispositivi elettronici (telefoni, tablet, riproduttori audio, computer) perche veicoli di "airbone particulate bacteria"
- Si consiglia di parlare il meno possibile
- Minimizzare il più possibile il tempo chirurgico
- Mantenere il paziente in normotermia
- Tutto il personale di sala operatoria deve utilizzare il detergente per mani alcolico e i guanti monouso ogni qual volta viene in contatto con ogni oggetto inanimato posizionato nelle immediate vicinanze del paziente.
- L'Equipe chirurgica deve sempre utilizzare un "doppio guanto sterile" e cambiare regolarmente almeno ogni 20 minuti, se rotti, se venuti in contatto con il PMMA o prima di impiantare le compenti protesiche.
- Aprire lo strumentario chirurgico il più tardi possibile senza però coprirlo con teli troppo grandi quando non in uso.
- Sostituire SEMPRE la lama del bisturi dopo l'incisione cutanea, mentre non ci sono studi sulla necessità di sostituire la punta dell'elettrobisturi.
- Sostituire ogni 60 minuti la "Yankauer suction tip" che può essere però utilizzata anche per l'aspirazione del canale midollare
- Per l'irrigazione della ferita chirurgica non utilizzare liquido mantenuto in bacinella sterile per più di 30 minuti.
- Nessun dato certo sul tipo di soluzione utilizzare: fisiologica, iodiopoviodone diluito o antibiotici sembrano effetti simili.
- Nessun dato certo sul reale vantaggio del lavaggio pulsatile.
- Nessun dato sul vantaggio nell'uso di vancomicina in polvere nella ferita chirurgica
- Si raccomanda l'uso di "incise draping", in grado di ridurre la carica batterica anche se mancano dati certi sulla reale capacità di ridurre il tasso di infezione periprotesica.
- Nessun dato sull'efficacia di proteggere i margini delle ferite chirurgiche con telini sterili.
- La preparazione del campo sterile deve essere eseguita mediante "teli impermeabili: nessun dato certo sul vantaggio del monouso sullo risterilizzabile.
- Nessun dato di reale efficacia nell'uso di alcun derivato dal sangue autololgo (prp).
- Il tipo di sutura (stapler, filo riassorbibile o non, o punti staccati o continua) non influisce sul tasso d'infezione periprotesica.
- L'uso sistematico della "Check list e del Timeout" tendono a ridurre il tasso d'infezione ricordando agli operatori la necessità ed il timing della profilassi antibiotica.
- L'uso del drenaggio post-operatorio aumenta il rischio d'infezione solo se mantenuto in sede per più di 24 ore.

Workgroup 5: Blood Conservation [246- 276]

Esiste una relazione tra trasfusioni di sangue e tasso di infezione periprotesico?

- Mentre è certa la relazione con la trasfusione omologa, rimane controverso il ruolo dell'autologa.

Quali sono gli accorgimenti necessari per ridurre la necessità di trasfusioni omologhe, quindi grado di ridurre il rischio d'infezione?

- Anestesia loco-regionale
- Interventi di breve durata
- Uso di acido tranexamico per via sistemica
- La correzione dell'anemia preoperatoria (ferro e/o eritropoietina)
- Nessun correlazione invece con emodiluizione, drenaggi e recupero di sangue intra e post-operatorio; uso di PRP o colla fibrina

Workgroup 6: Prosthesis Selection [277-322]

Quali fattori sono correlati ad un aumento del tasso di infezione periprotesica?

- L'uso di cemento antibiotato è in gado di ridurre sensibilmente il tasso di infezione periprotesica soprattutto nei pazienti a rischio e nelle revisioni
- Nelle protesi d'anca, l'accoppiamento metallo-metallo sembrerebbe essere correlato ad un più alto tasso di infezione periprotesica
- Nelle megaprotesi il tasso d'infezione è sensibilmente più alto che negli impianti standard
- Al contrario nessuna differenza è dimostrata tra:
  - l'uso di "allograft" o "augments"
  - protesi cementata o a press fit

Workgroup 7:
Diagnosis of Periprosthetic Joint Infection [323-358]

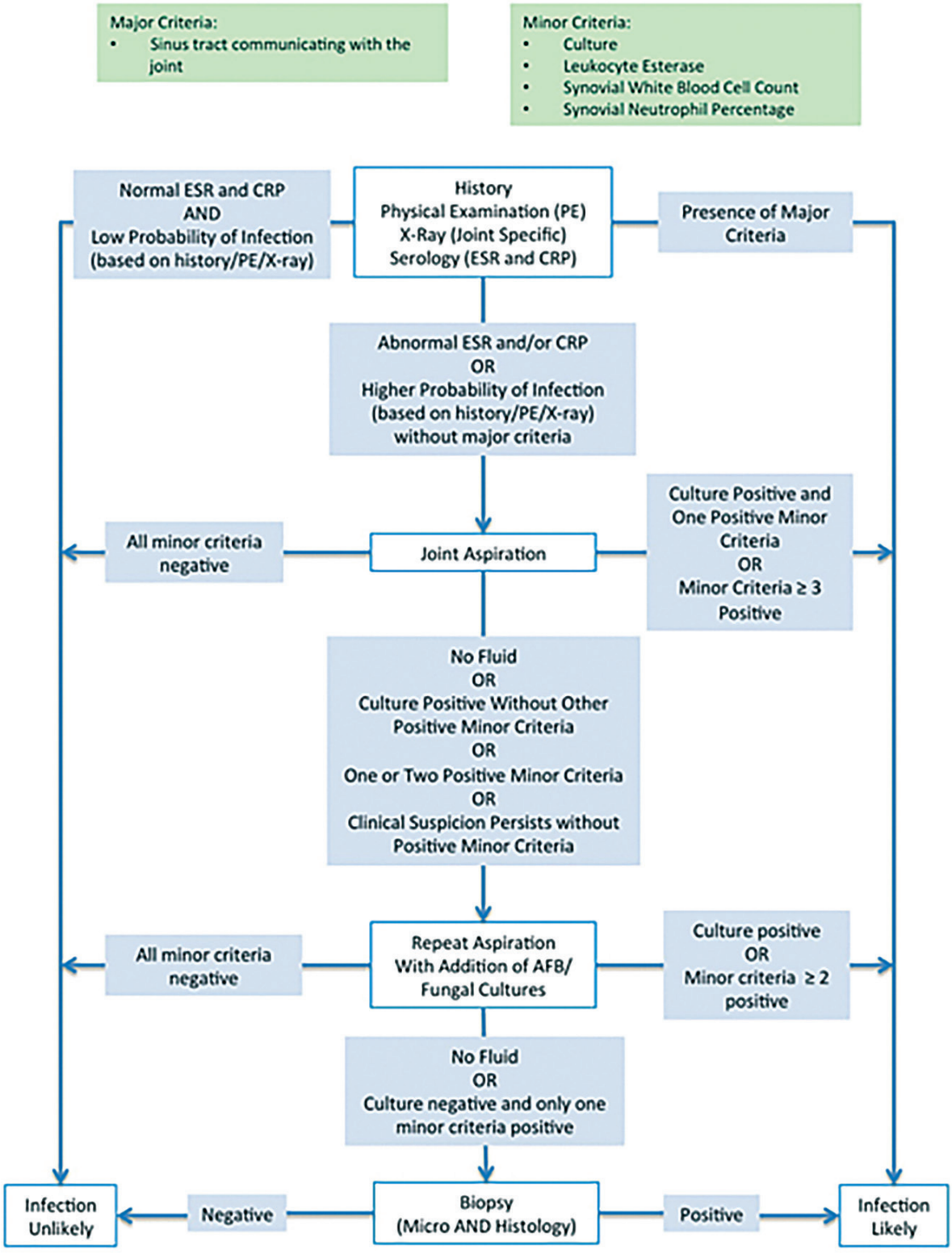
Qual è la definizione di "infezione periprotesica" (PJI)?

- Diagnosi di certezza si ha solo:
- quando è presente un criterio maggiore
- quando sono presenti almeno 3 criteri minori

CRITERI MAGGIORI	CRITERI MINORI
	Aumento di VES e PCR(> 100 mg/L se infezione acuta e >10mg/L se infezione cronica)
2 esami colturali positivi	Aumento di numero di globuli bianchi nel liquido sinoviale(>10000 WBC/microlitri se infezione acuta e >3000 WBC/microlitri se infezione cronica)
Presenza di fistola articolare secernente	Aumento della percentuale dei polimorfonucleati (PMN>90% se infezione acuta e >80% se infezione cronica) nel liquido sinoviale
	Esame istologico del tessuto periprotesico positivo per infezione
	1 esame colturale positivo

- recenti e promettenti studi sottolineano l'ottima sensibilità e specificità della positività del liquido sinoviale alla "leukocyte esterase" ad un semplice stick per urine

- C'è consenso internazionale nell'uso del seguente algoritmo (AAOS)



- Un esame colturale è considerato negativo dopo 2 settimane di coltura
- La ricerca di "acid-fast bacillus (AFB)" o miceti va effettuata solo in caso di pazienti a rischio

Qual è la metodica corretta di prelievo di tessuti idonei all'esame colturale in caso di sospetta infezione periprotesica?

- Durante la chirurgia di revisione dai 3 ai 6 campioni di tessuto per aerobi ed anaerobi
- L'uso di tamponi è vivamente sconsigliato
- La sonificazione è un processo da non utilizzare routinariamente
- Il liquido sinoviale da artocentesi è tessuto idoneo all'esame colturale
- Il prelievo diretto di tessuto o liquido da soluzioni di contunuo cutaneo sono vivamente sconsigliati
- A tutt'oggi nessun ruolo è da attribuire tecniche molecolari

Workgroup 8: Wound Management [359-392]

Qual è il tipo di medicazione della ferita chirurgica ritenuto più utile a ridurre il rischio di infezioni periprotesiche?

- Medicazione sterile a piatto
- L'uso routinario di alginated hydrofiber,("AQUACEL") rispetto a medicazioni a piatto (mepore o Cutiplast") sembrerebbe ridurre il rischio di infezione periprotesica
- Al contrario medicazione impregnate d'Argento non sembrano ridurre il rischio di infezione periprotesica

Quando una ferita diventa secernete?

- Quando si ha una secrezione in grado di "sporcare" la garza per più di 2 x 2 centimetri per più di 72 ore

Cosa fare se una ferita permane secernete per più di 72 ore? (il rischio di infezione sale del 405 ogni giorno di secrezione senza trattamento!!)

- E' molto sconsigliato l'uso indiscriminato di antibiotici
- Pertanto si consiglia:
  - Medicazioni a piatto o avanzate o VAC terapia per massimo 5-7giorni
  - Revisione chirurgica se secrezione di durata superiore ai 5-7 giorni:
    - Apertura della fascia
    - Abbondante lavaggio e debridment
    - Sostituzione delle componenti modulari
    - Prelievo di 3-6 campioni di tessuto significativo da inviare per esame colturale
    - Terapia antibiotica: cominciata 1 ora prima dell'incisione chirurgica (Vancomicina + Gentamicina) in attesa dell'antibiogramma
    - Sutura con monofilamento

Workgroup 9: Spacer [393-434]

Che differenze esistono tra spaziatori articolati e fissi

- Differenze funzionale:
  - Ginocchio: nessuna differenza funzionale a 2 anni se mantenuti per meno di 3 mesi
  - Anca: nessuna differenza funzionale a 2 anni
- "surgical ease" difficoltà chirurgica:
  - Intervento più semplice, più veloce e gravato da minor complicanze in caso di spaziatore articolato
- Tasso di reinfezione:
  - Nessuna differenza né per anca né per ginocchio

Che differenza funzionale o di tasso di reinfezione esiste tra gli spaziatori presenti in commercio e quelli modellati dal chirurgo?

- Nessuna

Quale e quanto antibiotico aggiungere al PMMA per preparare gli spaziatori?

GRUPPO ANTIBIOTICI	TIPO DI ANTIBIOTICO	ATTIVITÀ	DOSE PER 40 G PMMA
Amino glicosidi	Tobramicina	Gram – (pseudomonas)	1-4.8g
	Gentamicina	Eschherichia coli, klebsiella pseudomonas	0.25-4.8
Cefalosporine 1° gen.	Cefazolina	Gram +	1-2
Cefalosporine 2° gen	Cefuroxime	Gram + ed alcuni gram-	1.5-2
Cefalosporine 3° gen	Ceftazidime	Gram –(anche pseudomonas)	2
Cefalosporine 4° gen	Cefotaxime	Gram –(no pseudomonas)	2
Cefalosporine 5° gen	Ceftaroilne	Gram –(no pseudomonas)	2-4
Fluorchinolonici	Ciprofloxacina	Gram – (anche enterobatteriacee)	0.2-3
Glicopeptide	Vancomicina	Gram + (anche meticillino resistenti)	0.5-4
	Clindamicina	Cocchi Gram+; anaerobi	1-2
Macrolidi	Eritromicina	Cocchi e bacilli Aerobi Gram +	0.5-1
Polimixina	Colestina	Gram -	0.24

Beta lattamici	Aztreonam	Batteri Gram -	4-8
Inibitori beta lattamasi	Tazobactam	Gram – (anche peudomonae ed enterobatteriacee)	
Oxazolidinoni	Linezolid	Mrsa	1.2
Carbapenemi	Meropenem	Batteri Gram + e – (anche psudomonas)	0.5-4
Lipopetide	Daptomicina	Gram+	2
Antifungini	Amfotericine		200
	Voricanazole		300-600

- Miscelare bene la polvere di antibiotico e quella del cemento prima di aggiungere il solvente
- 4.5 g ogni 40 di cemento ne diminuiscono sensibilmente le proprietà meccaniche

Workgroup 10: Irrigation and Debridement [435-457]

"Lavaggio e debridment" vanno sempre eseguiti in caso di infezione precoce, quindi entro 3 mesi dall'impianto protesico entro le 3 settimane dall'insorgenza dei sintomi

"Lavaggio e debridment" può essere eseguito anche in caso di infezione tardiva, solo in caso di comprovata infezione ematogena entro le 3 settimane dall'insorgenza dei sintomi

Esistono controindicazioni assolute al"lavaggio e debridment"?

- Fistola cutanea
- Impossibilità ad ottenere una chiusura per prima intenzione della ferita
- Mobilizzazione componenti protesiche

In caso di "Lavaggio e debridment" va sempre aperta anche la fascia profonda

Come eseguire correttamente un "Lavaggio e debridment"?

- Preparare adeguatamente il paziente ad un nuovo intervento(correzione anemia e sospensione temporanea profilassi TVP
- Buona visualizzazione (assolutamente controindicata l'artroscopia)

- Sostituzione componenti modulari
- Debridment aggressivo
- Eseguire da 3 a 6 prelievi di tessuto apparentemente infetto
- Abbondante lavaggio (da 6 a 9 litri) intraoperatorio; sconsigliato il lavaggio continuo nel post-operatorio mediante cateteri o drenaggi
- Rimuovere la protesi se necessario

In caso di persistenza dei sintomi dopo "Lavaggio e debridment", eseguire espianto della protesi

In caso di positività ai criteri diagnostici di infezione periprotesica, proseguire la terapia antibiotica nei tempi e nelle dosi consigliate anche dopo "Lavaggio e debridment"

Nessun dato a favore dell'uso di perle riassorbibili impregnate di antibiotico

Workgroup 11:
Antibiotic Treatment and Timing of Reimplantation [458-487]

Si raccomanda una terapia antibiotica endovenosa della durata di 2 settimane seguite da una terapia antibiotica orale della durata di 2-4 settimane (durata totale 4-6 settimane)

Attualmente NON c'è consenso su come decidere quando reimpiantare la protesi dopo espianto: segni clinici e marker sierologici hanno bassa sensibilità e sensività quindi anche sulla necessità di un periodi di wash-out farmacologico prima di reimpiantare la protesi

Non è necessario eseguire artrocentesi prima del reimpianto

L'aggiunta della Rifampicina orale in associazione a terapia antibiotica endovenosa parrebbe migliorare i risultati rispetto alla sola monoterapia endovenosa (consenso <80% delegati)

In caso invece di One-stage, la terapia antibiotica va protratta per 2-6 settimane

Workgroup 12:
One-stage vs Two-stage Exchange [488-508]

Indicazione alla revisione One-Stage è l'infezione periprotesica nella quale si ha avuto una identificazione certa del microorganismo responsabile senza segni di malattia sistemica e con cute integra

Indicazioni certe alla revisione Two-Stage sono:

- Manifestazioni sistemiche di infezione (sepsi)
- Nessuna identificazione microbiologica
- Isolamento di germe multiresistente o di difficile trattamento antibiotico
- Presenza di fistola cutanea
- Presenza sofferenza cutanea

In caso di persistenza dell'infezione dopo l'espianto, e possibile ripetere un nuovo intervento di debridment e di sostituzione dello spaziatore (anche più volte)

Indicazione all'artrodesi sono:

- Persistenza del processo settico anche dopo più tentativi di debridment e spaziatore
- Insufficienza dell'apparato estensore (in caso ginocchio)

Indicazioni all'amputazione sono:

- Pazienti non ambulanti
- Fascite necrotizzante resistente al debridment aggressivo
- Importante perdita di sostanza ossea tale da rendere impossibile l'artrodesi
- Inadeguata copertura dei tessuti molli
- Fallimento delle altre metodiche
- Deficit vascolo nervosi importanti

Workgroup 13: Management of Fungal or Atypical Periprosthetic Joint Infections [509-533]

La diagnosi viene fatta solo in caso di isolamento del microorganismo in un soggetto con sintomatologia certa di infezione periprotesica

Cause predisponenti sono:

- Diabete
- Malattie autoimmuni
- Pregressa infezione periprotesica con conseguente terapia prolungata antibiotica
- Terapia cronica con immunosoppressori
- Hiv
- Patologia neoplastica

La terapia consigliata è la revisione Two-stage, anche se i risultati sono peggiori che nelle infezioni batteriche associata a terapia combinata di Amfotericina b + azoles per almeno 6 settimane

Workgroup 14: Oral Antibiotic Therapy [534-555]

L'uso di antibiotici in caso di infezione periprotesica è raccomandato:

- Per 4-6 settimane
  - Infezioni acute trattate con "Lavaggio e Debridment"
  - Nell'intervallo tra le due procedure delle revisione Two-stage
  - Dopo il reimpianto in caso di revisione Two-stage
  - Dopo la revisione in caso di revisione One –stage
- Terapia soppressiva (SAT), quindi per almeno 23 mesi, o per tutta la vita
  - Pazienti che rifiutano il trattamento chirurgico
  - Pazienti non operati per controindicazioni
  - Infezione da stafilococce aurea MRSA
  - Pazienti nei quali l'infezione non appare clinicamente debellata
  - Pazienti trattati inadeguatamente:
    - Debridment senza rimozione protesi nelle infezioni tardive
    - "lavaggio e debritment" eseguito in maniera inappropriata(artroscopico, senza sostituzione delle componenti modulari ecc)
    - Corretto trattamento chirurgico ma trattamento farmacologico errato
      - Non uso di rifampicina associata ad altro antibiotico in caso di infezione staffilococica
      - Non uso di fluorochinolonici in caso di infezione gram-
- In caso di terapia soppressiva gli antibiotici da usare per via orale sono:

Amoxicillina-ac.clavulamico	875mh/8h
Cephalexina	1g/8h
Ciprofloxacina	500mg/24h
Levofloxacina	500mg/24h
Clindamicina	300mg/8h
Rifampicina	600mg/24h
Doxycyclina	100mg/12h
Cotrimoxazolo	600mg/12h
Linezolid	600mg/12h
Fluconazolo	400mg/24h

Workgroup 15: Prevention of Late PJI [556-596]

L'infezione tardiva è un'infezione periprotesica insorta a distanza di tempo dall'impianto: si sviluppa dopo un iniziale buon risultato clinico e radiografico.

Il percorso diagnostico terapeutico è simile all'infezione periprotesica insorta senza periodo di benessere (vedi workgroup 7)

Tra i portatori di protesi articolari è utile eseguire una profilassi antibiotica (amoxicillina 2g o cefalexina o clindamicina 600 mg 1 g o 1 ora prima della procedura) in caso di interventi chirurgici a rischio (quale la chirurgia endoorale o colonscopia) solo nei pazienti ad alto rischio:

- Pazienti con artrite reumatoide
- Pazienti in terapia con immunosoppressori
- Pazienti affetti da immunodeficienza congenita o acquisita
- Pazienti con diabete insulino-dipendente
- Emofilici
- In presenza di una grave infezione sistemica

In caso di iperpiressia persistente più di 3 giorni dall'intervento implica la necessità di eseguire i seguenti accertamenti:

- Analisi urine
- Urinocoltura
- Emocoltura
- RX torace
- Successivamente anche esami per escutere TVP o infezione del catere venoso

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