UNIVERSITÀ DEGLI STUDI DI MILANO

PANDORA ID - 23
TIME TO WEBINAR IN INFECTIOUS DISEASES

Le infezioni stafilococciche – Caso clinico

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Clinical presentation

- M, 67 yrs
- No relevant medical history
- No SARS-CoV-2 vaccination
- Recent hospitalization for ARDS in SARS-CoV-2 pneumonia (16/11/21-05/12/21): need for CPAP, administered therapeutic casivirimab/imdevimab, remdesivir (5-days course), anakinra (100mg for 10d), desamethasone>methylprednisolone. No antibiotic therapy. Discharged in good clinical conditions.
- Nasal colonization by MRSA: topical mupirocin for 5 days

Outpatient ID evaluation

- Three days after discharge from hospital, sudden onset of fever and pain in left thigh
- TMP/SMX 160/800mg q12h was started with fever resolution
- Outpatient evaluation (14/12): aphyrexia but persistent pain + PCR 20 mg/dL → blood cultures

Blood cultures: 2/2 set

Microorganismi isolati:		- 1 -	Staphylococcus aureus
ANTIBIOGRAMMA	- 1 -		
Acido Fusidico	S	<=0.5	
Amoxicillina/A.Clav.	R		
Ampicillina/sulbactam	R		
Azitromicina	S		
Cefaclor	R		
Cefoxitina Screen	+	Pos	
Ceftarolina(altre diagnosi)	S	0.25	
Ceftarolina(polmoniti)	S	0.25	
Ceftriaxone	R		
Clindamicina	S	0.25	
Daptomicina	S	0.25	
Eritromicina	S	1	
Gentamicina	S	<=0.5	
Levofloxacina	S	0.25	
Linezolid	S	2	
Mupirocina	S	<=1	
Oxacillina	R	>2.0	
Penicillina G	R	>0.25	
Rifampicina	S	<=0.03	
Teicoplanina	S	<=0.5	
Tetraciclina	S	<=1	
Tigeciclina	S	<=0.12	
Trimetoprim/Sulfam.	S	20	
Vancomicina	S	<=0.5	

Emergency department

- Chest X-ray: compatible with prior ARDS in COVID-19, no new consolidations
- EchoTE: no vegetations
- Daptomicyn 850mg (12mg/kg) q24h started on 16/12

Hospital ward

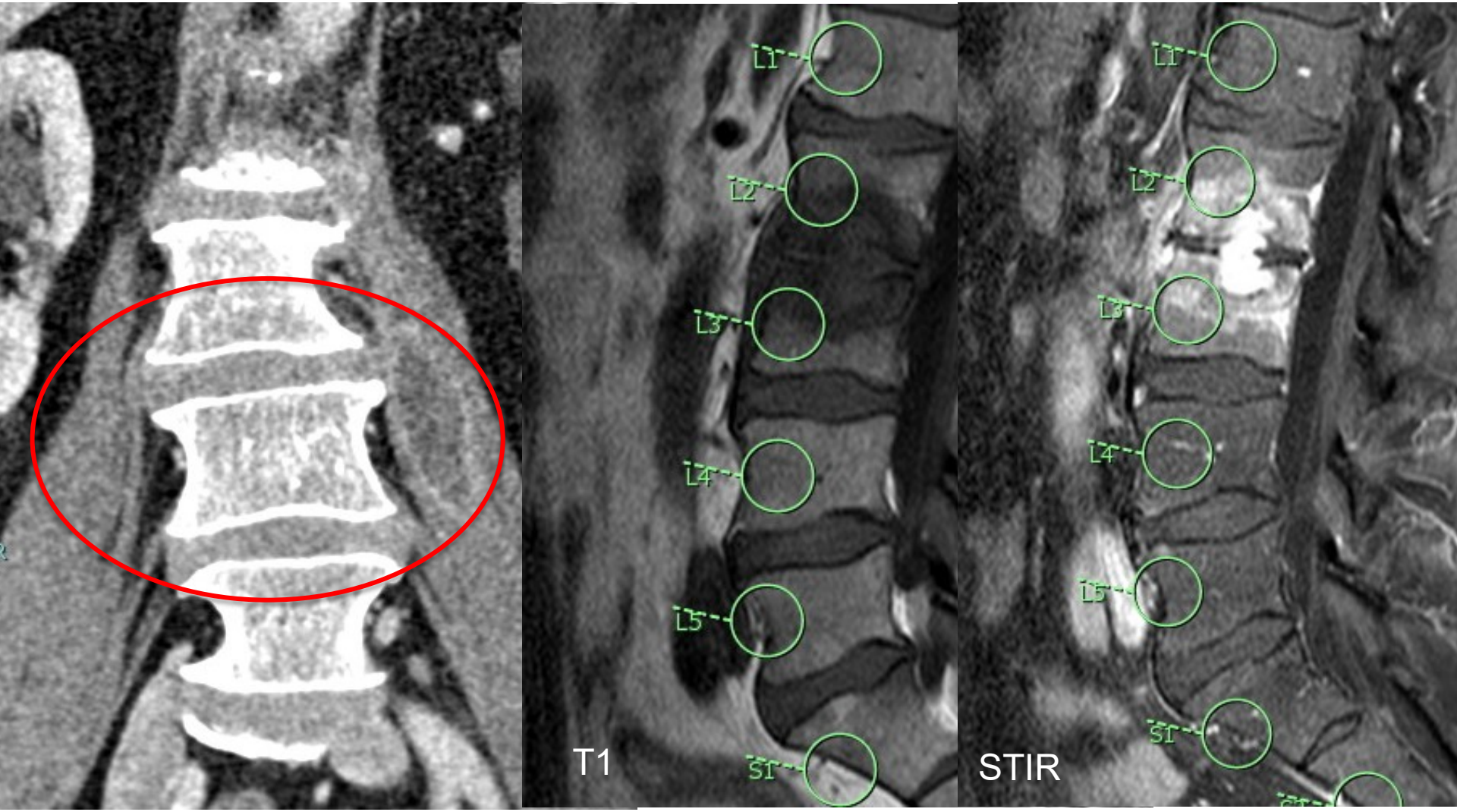
- Daptomycin continued > PCR reduction, follow-up blood cultures negative 19/12 and 21/12

- CT: left m.psoas abscess (8x2x1.8cm) extended to L2-L3

- RMN: confirms paravertebral abscess L2-L3

→ infective spondylodiscitis of L2 and L3 and m.psoas abscess

CT and RMN



Hospital ward

- EcoTT (28/12): suspected mitral vegetation (9x6mmm)
- EcoTE (30/12): NO vegetations, aortic cusp tissue exuberance
- TC-guided drainage (24/12) of paravertebral abscess

Drainage culture

Microorganismi isolati:		- 1 -	**Staphylococcus aureus**	Numerose colonie
ANTIBIOGRAMMA	- 1 -			
Acido Fusidico	**S**	**<=0.5**		
Amoxicillina/A.Clav.	**R**			
Ampicillina/sulbactam	**R**			
Azitromicina	**S**			
Cefaclor	**R**			
Cefoxitina Screen	**+**	**Pos**		
Ceftarolina(altre diagnosi)	**S**	**0.25**		
Ceftarolina(polmoniti)	**S**	**0.25**		
Ceftriaxone	**R**			
Clindamicina	**S**	**0.25**		
Daptomicina	**S**	**0.25**		
Eritromicina	**S**	**0.5**		
Gentamicina	**S**	**<=0.5**		
Levofloxacina	**S**	**0.25**		
Linezolid	**S**	**2**		
Mupirocina	**S**	**<=1**		
Oxacillina	**R**	**>2.0**		
Penicillina G	**R**	**>0.25**		
Rifampicina	**S**	**<=0.03**		
Teicoplanina	**S**	**<=0.5**		
Tetraciclina	**S**	**<=1**		
Tigeciclina	**S**	**<=0.12**		
Trimetoprim/Sulfam.	**S**	**<=10**		
Vancomicina	**S**	**<=0.5**		
R=Resistente; I=Intermedio;S=Sensibile				

Hospital ward

- New onset of fever while on daptomycin (29/12) > blood cultures: Gram+ staining
- TC-TB: reduced size of abscess after drainage, new small abscess 0.8x1.8cm, no embolic lesions
- F.O. no ocular involvement

Blood cultures 2/2 set

Microorganismi isolati:

ANTIBIOGRAMMA	- 1 -	
Acido Fusidico	S	<=0.5
Cefoxitina Screen	+	Pos
Ceftarolina(altre diagnosi)	S	0.25
Ceftarolina(polmoniti)	S	0.25
Clindamicina	S	0.25
Daptomicina	S	1
Eritromicina	S	1
Gentamicina	S	<=0.5
Levofloxacina	S	0.25
Linezolid	S	2
Mupirocina	S	<=1
Oxacillina	R	>2
Penicillina G	R	>0.25
Rifampicina	S	<=0.03
Teicoplanina	S	<=0.5
Tetraciclina	S	<=1
Tigeciclina	S	<=0.12
Trimetoprim/Sulfam.	I	80
Vancomicina	S	1

R=Resistente; I=Intermedio;S=Sensibile

Microorganismi isolati:

ANTIBIOGRAMMA	- 1 -	
Acido Fusidico	S	<=0.5
Amoxicillina/A.Clav.	R	
Ampicillina/sulbactam	R	
Azitromicina	S	
Cefaclor	R	
Cefoxitina Screen	+	Pos
Ceftarolina(altre diagnosi)	S	0.25
Ceftarolina(polmoniti)	S	0.25
Ceftriaxone	R	
Clindamicina	S	0.25
Daptomicina	S	0.25
Eritromicina	S	0.5
Gentamicina	S	<=0.5
Levofloxacina	S	0.25
Linezolid	S	2
Mupirocina	S	<=1
Oxacillina	R	>2.0
Penicillina G	R	>0.25
Rifampicina	S	<=0.03
Teicoplanina	S	<=0.5
Tetraciclina	S	<=1
Tigeciclina	S	<=0.12
Trimetoprim/Sulfam.	S	<=10
Vancomicina	S	<=0.5

R=Resistente; I=Intermedio;S=Sensibile

Staphylococcus aureus

Hospital ward

- Daptomycin combined with ceftaroline 600mg q8h extended-infusion
- Bacteremia cleared since 08/01
- EcoTT (13/01): no vegetations
- Hospital discharge (17/01)>rehab to continue iv therapy

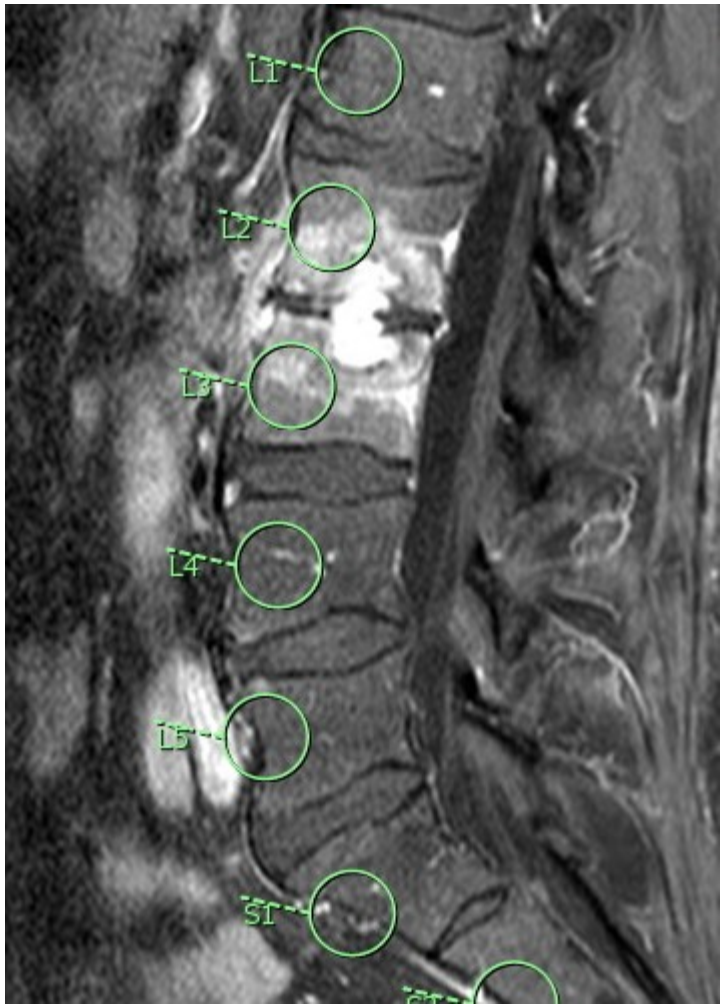
Outpatient f/u

- Daptomycin + ceftaroline stopped (06/02) > linezolid 600 mg 12h and then adjusted according to TDM to 600+300mg > antibiotic suspended 12/04 (12 wks since bacteremia clearance)

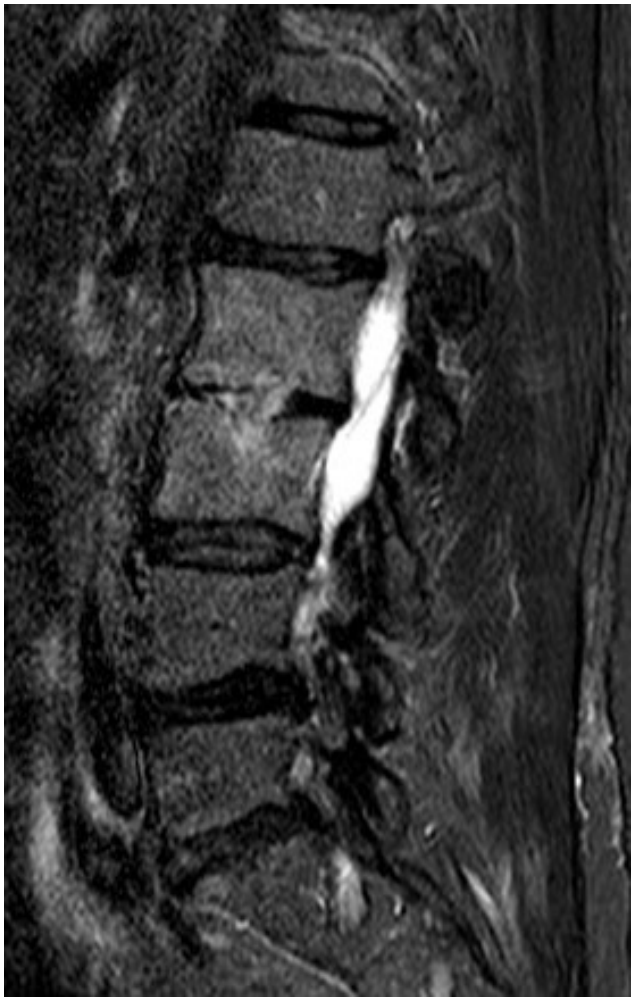
- No evidence of recurrence in atb washout

- Progressive resolution of abscesses and improvement of spinal lesions at radiological f/u

RMN



Dec 2021



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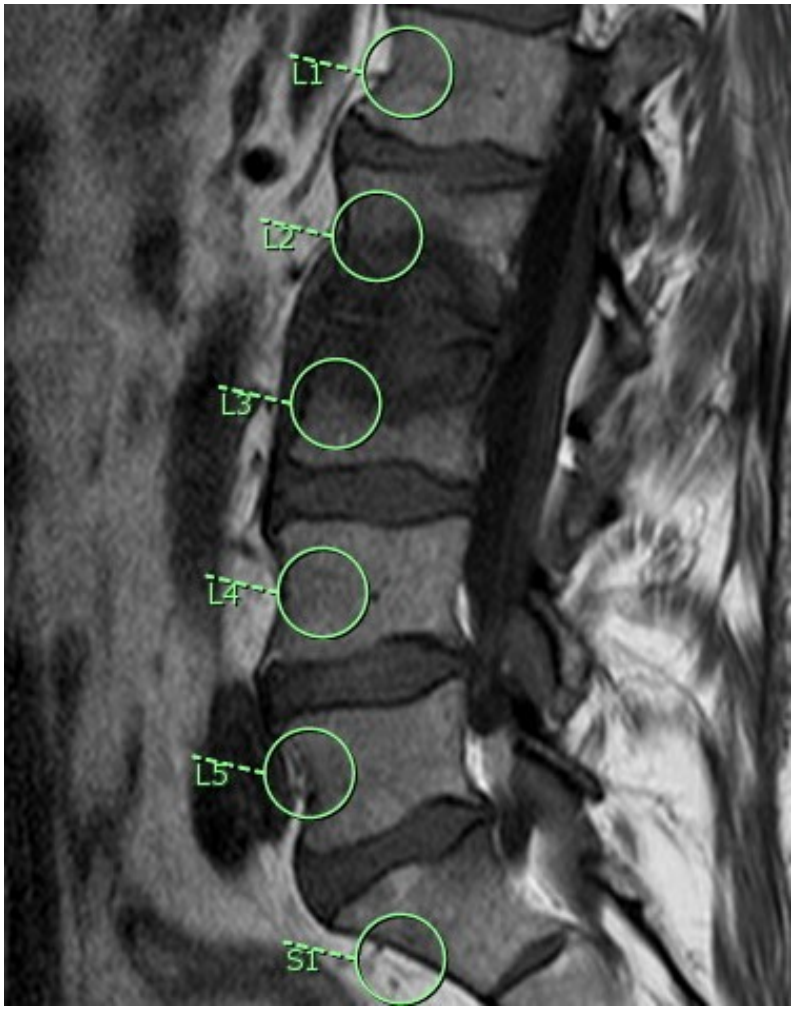
RMN



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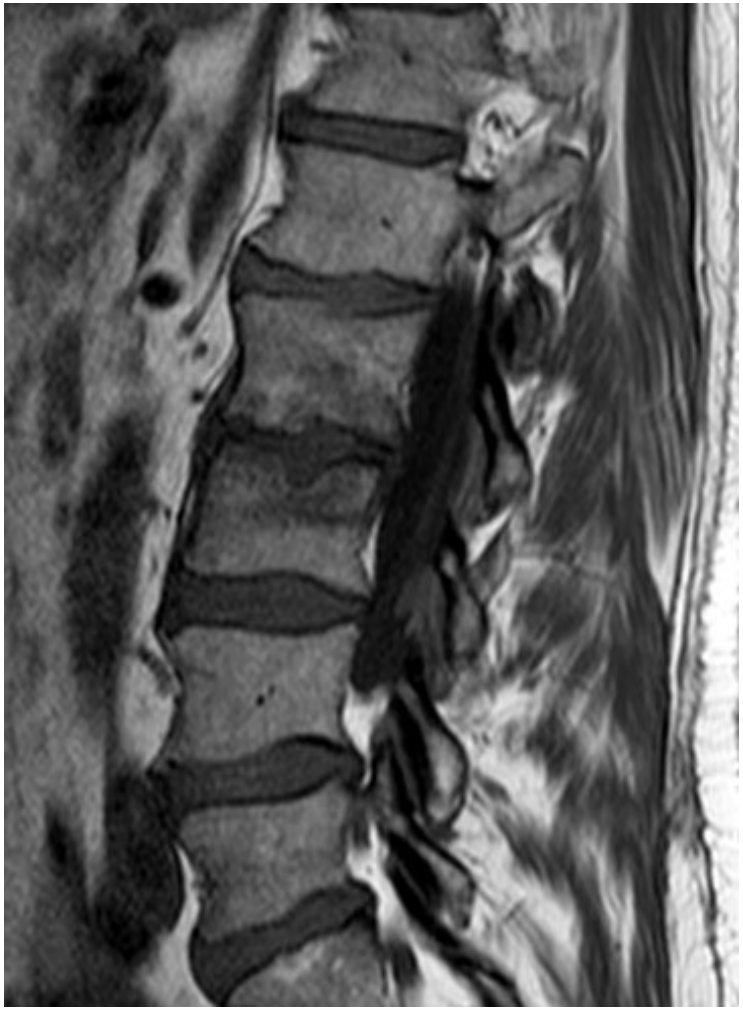

June 2022

Take home messages

- COVID-19 and iatrogenic immunosuppression
- Caution in daptomycin monotherapy for MRSA bacteremia
- Combination of daptomycin + ceftaroline or other antistaphylococcal β-lactams
  - *Seesaw effect*
  - β-lactam reduction of cell wall cross-linking
  - synergy of β-lactams with endogenous cationic host defense peptides
  - increased NLRP3 inflammasome activation and IL-1β-mediated bacterial clearance induced by altered peptidoglycan synthesized by MRSA
- Source control
- Echo repetition
- MRSA decolonization (!)

Thank you for your attention.