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Adverse events (AE) during prosthetic joint infection (PJI) empirical antimicrobial therapy: a five year prospective cohort study

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Patrick Mialhes, Michel Fessy, Frédéric Laurent, Thomas Perpoint, Christian Chidiac,
Tristan Ferry
on behalf of the **Lyon BJI study group**



Hospices Civils de Lyon



MIT – CRIOAc Lyon
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Introduction



PJI incidence 1.5%

Mortality **4.6%**

Difficult to treat

High doses of ATB

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Main pathogens

Gram positive cocci : SA, CoNS (> 65%),

Streptococcus (20%),

Gram negative bacilli : *Enterobacteriaceae* (20%)



VANCOMYCIN + BROAD SPECTRUM BETA-LACTAMIN

- 3rd generation cephalosporin

- Piperacillin-Tazobactam

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Tolerance?

Material & Methods

Prospective cohort of the reference centre for the management of PJIs, between 2011/2016

Inclusion criteria

All adult patients (>18 years) managed for a PJI who received an empirical antimicrobial therapy

Prosthetic joint infection

Clinical, morphological, microbiological and therapeutic criteria

Adverse events

- Prospective collection of AE occurring on empirical antimicrobial therapy (until 21st day)
- Retrospective collection of the AE characteristics
- Classification according to the National Cancer Institute (CTCAE)

Results

567 patients



333 Empirical antibiotic therapy

Male: 168 (51%)

Median age : 70 yo (59-79)

ASA score: 2 (2-3)

PJI :

- Hip (54%) and Knee (43%)

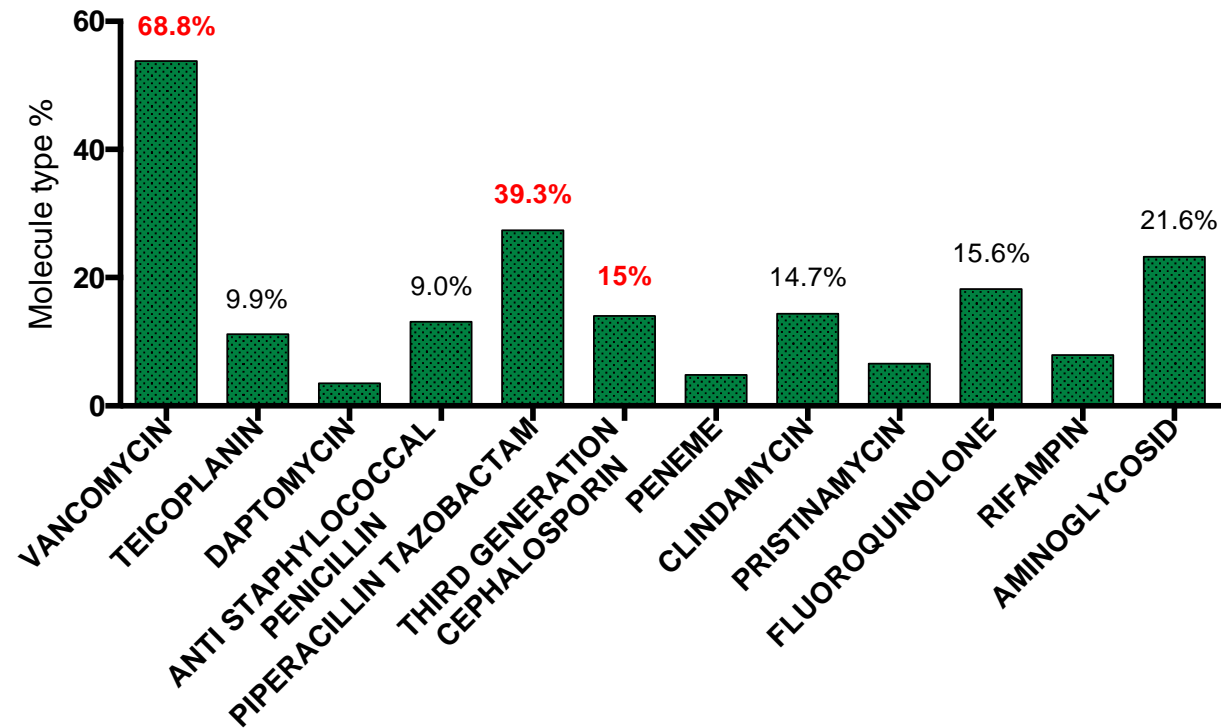
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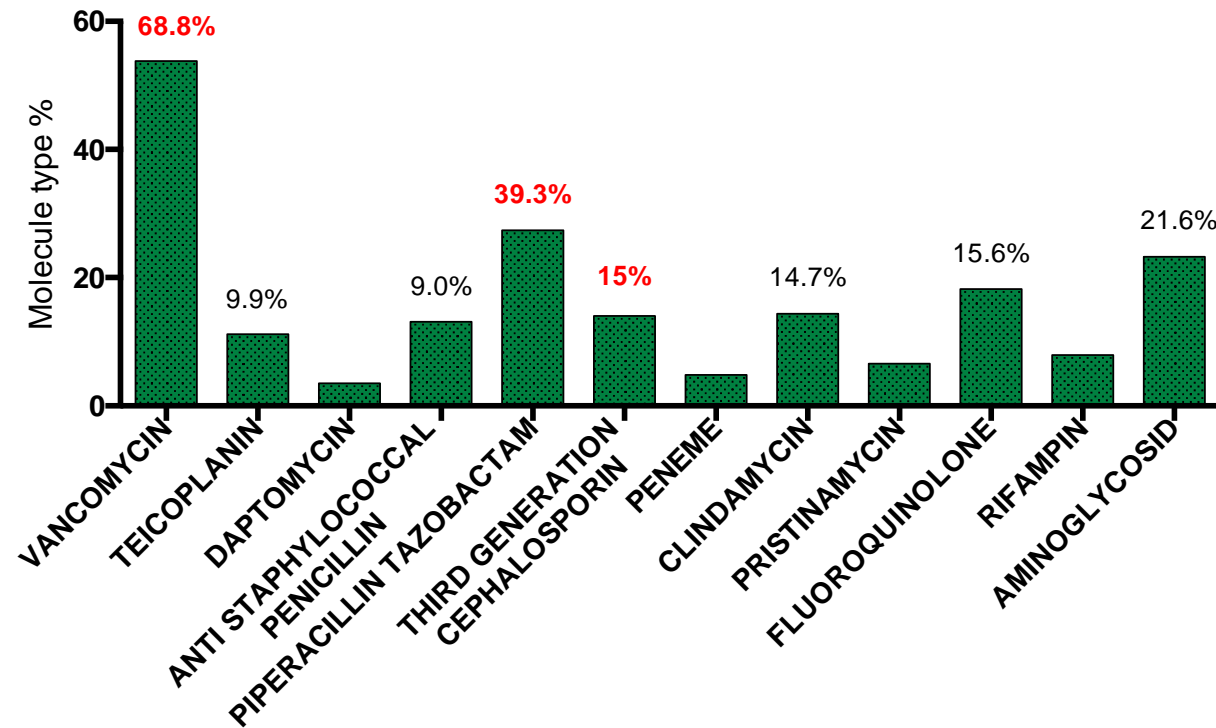
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Main combinations

VANCOMYCIN + PIPERACILLIN/TAZOBACTAM

123 (37%)

VANCOMYCIN + 3rd GENERATION CEPHALOSPORIN

33 (10%)

Results

567 patients



333 Empirical antibiotherapy



42 Adverse events (12.6%)

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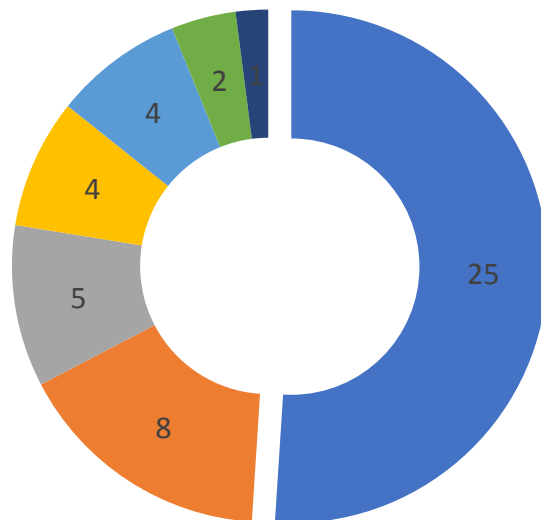
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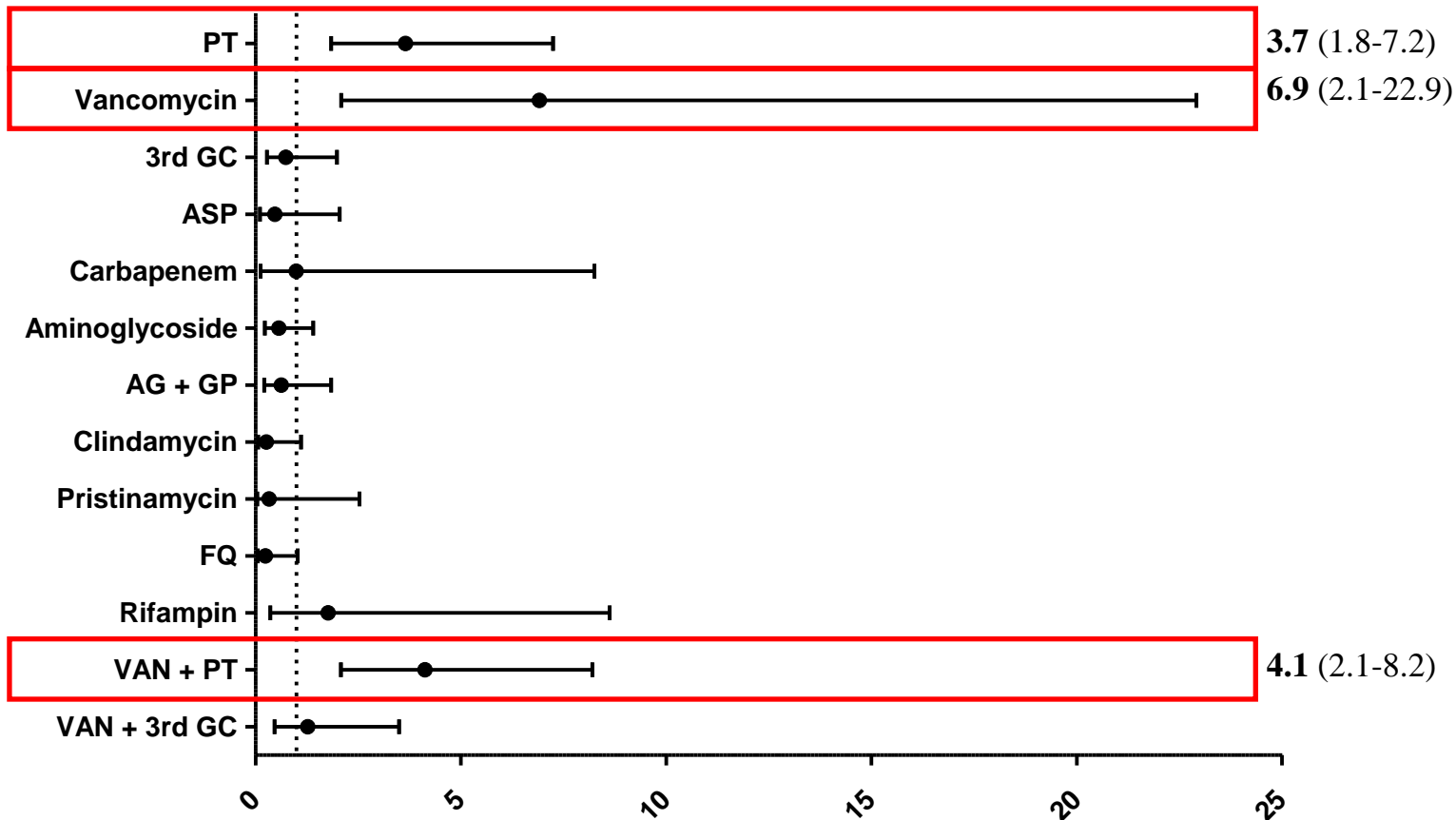


- Renal and urinary disorders
- Skin and subcutaneous tissue disorders
- General disorders and administration site conditions
- Blood and lymphatic system disorders
- Immune system disorders
- Hepatobiliary disorders
- Gastrointestinal disorders

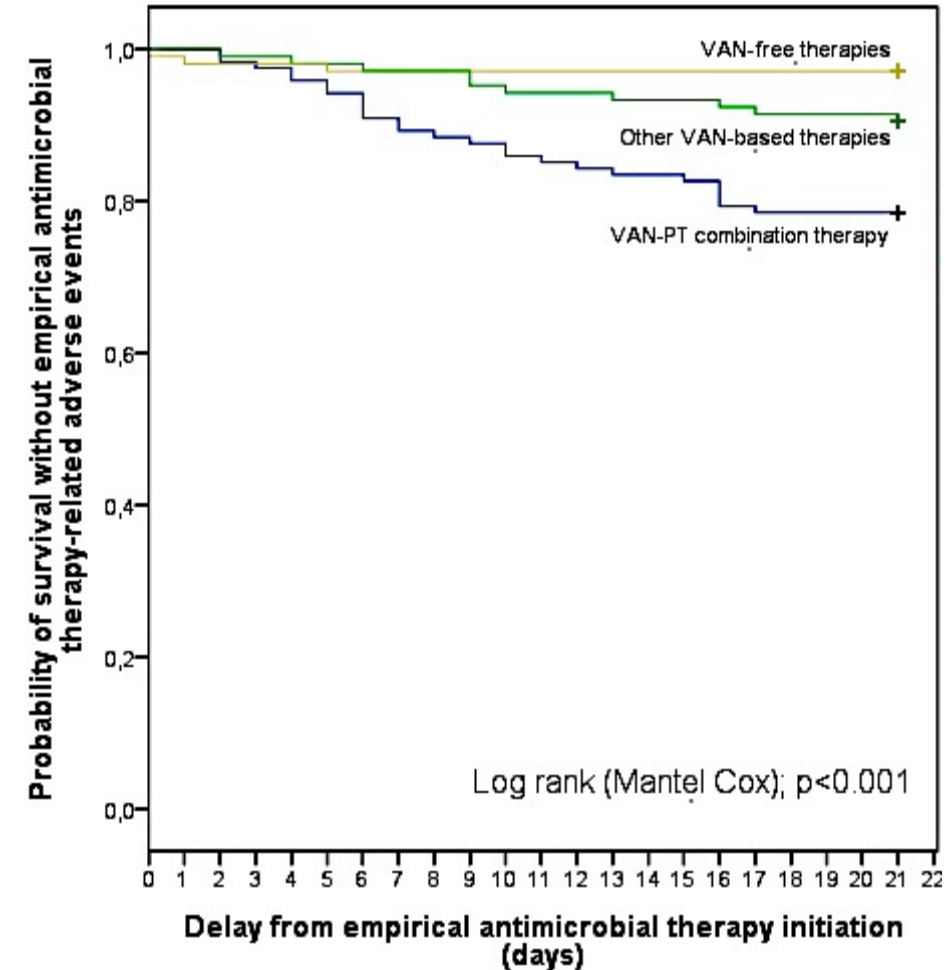
Results: Adverse event risk factors

OR (univariate analysis) :

Demographic characteristics are not significant



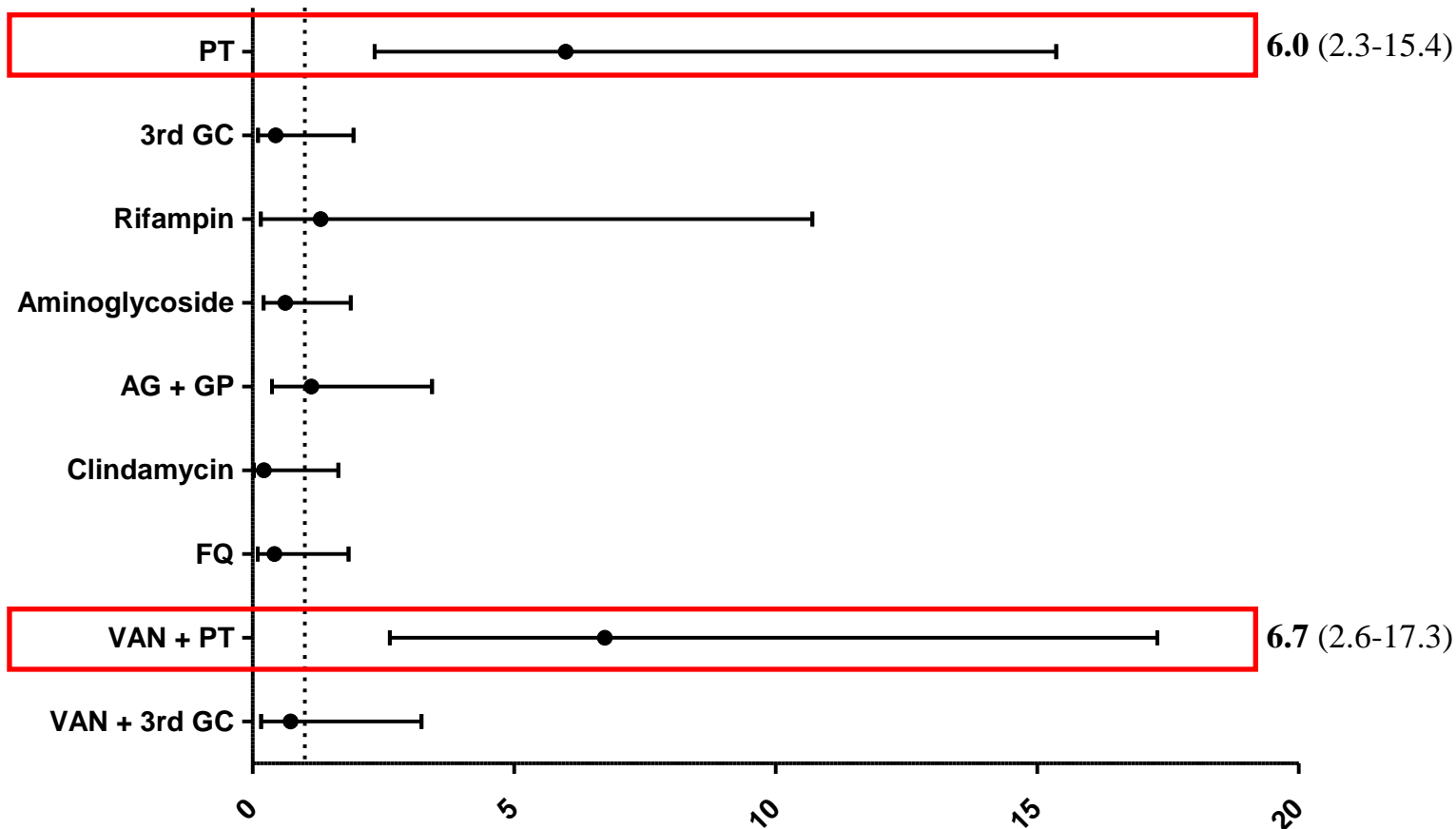
Kaplan Meier :



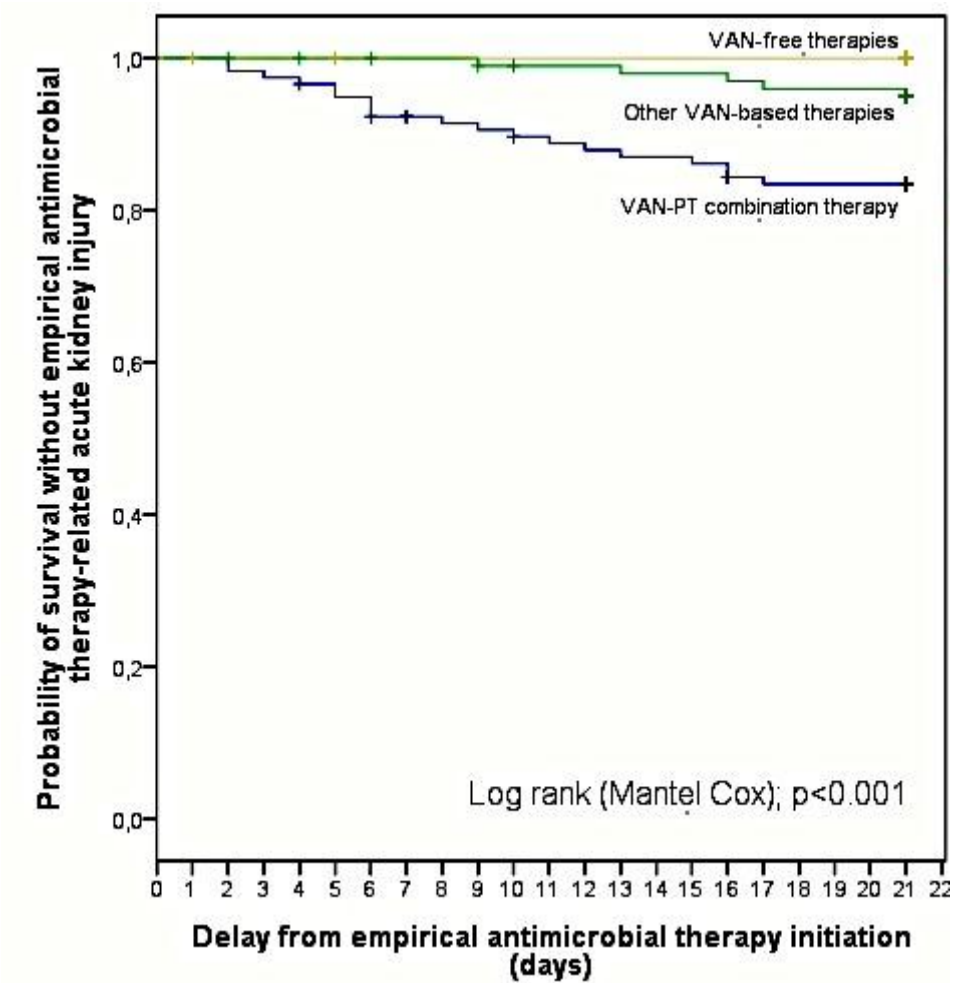
Results: Acute kidney injury risk factors

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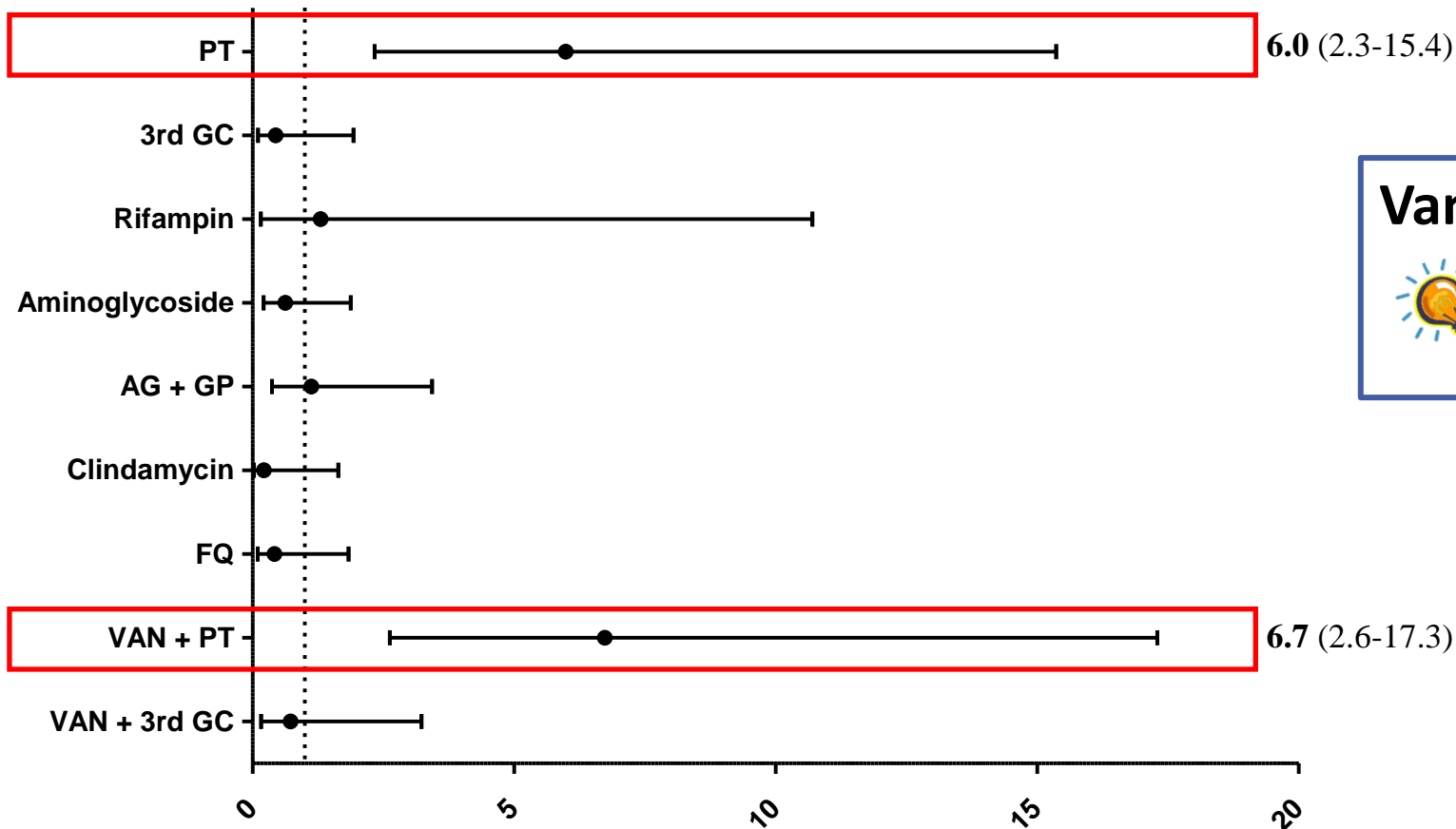
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Results: Acute kidney injury risk factors

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Vancomycin overdose



8 (33.3%) patients → AKI
Not related to AKI occurrence

Conclusions

- High adverse event rate during the empirical antimicrobial therapy (12.6%)
- Toxicity of the vancomycin – piperacillin/tazobactam combination

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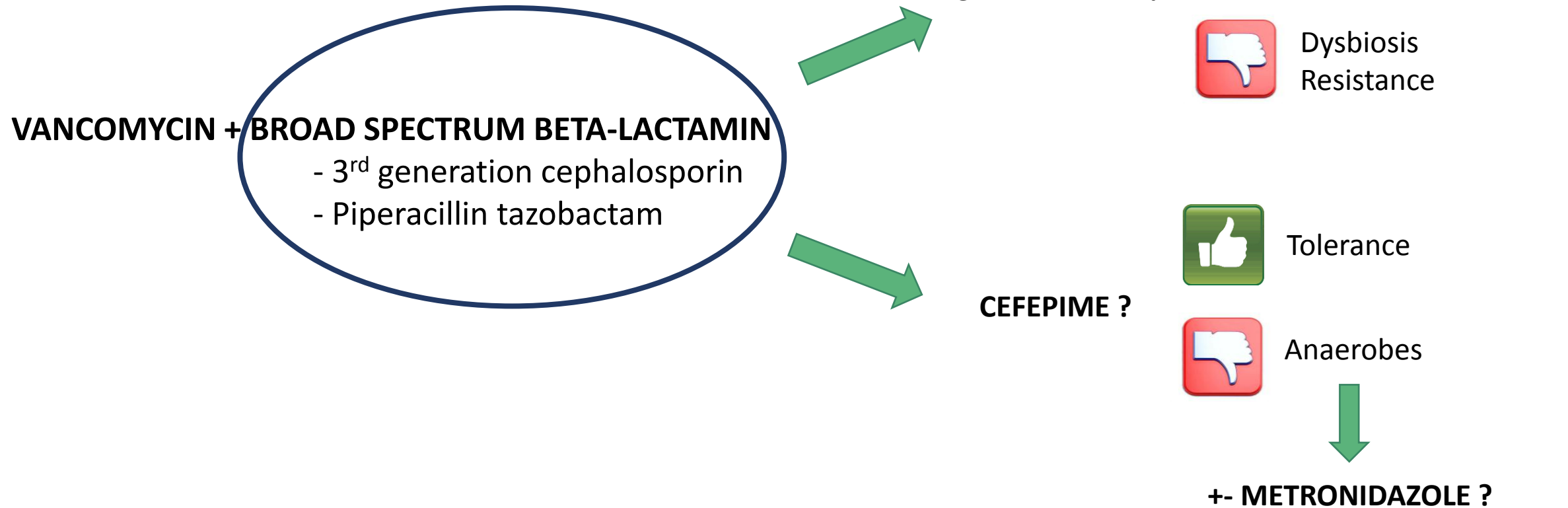
Very broad spectrum



Dysbiosis
Resistance

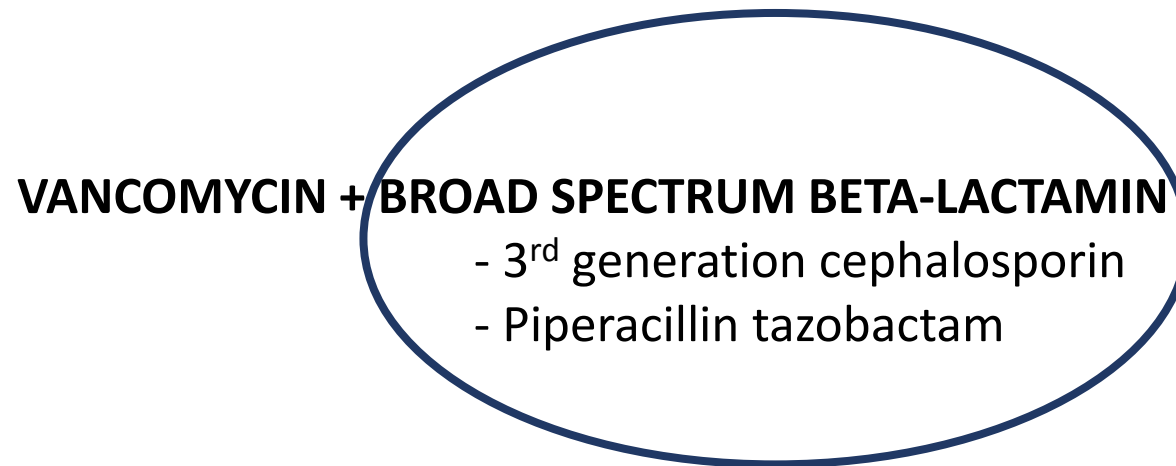
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CARBAPENEM ?



Very broad spectrum



Dysbiosis
Resistance

CEFEPIME ?



Tolerance



Anaerobes



+ METRONIDAZOLE ?

- Is this broad spectrum beta-lactamin necessary everytime?
- Couldn't we « target » according to the time to occurrence of PJI?

Aknowledgement : Lyon BJI study group

- **Coordinator** – *Tristan Ferry*
- **Infectious diseases specialits** – *Tristan Ferry, Florent Valour, Thomas Perpoint, André Boibieux, François Biron, Patrick Mialhes, Florence Ader, Agathe Becker, Sandrine Roux, Claire Triffault-Fillit, Fatiha Daoud, Johanna Lippman, Evelyne Braun, Christian Chidiac, Yves Gillet, Laure Hees*
- **Surgeons** – *Sébastien Lustig, Elvire Servien, Yannick Herry, Romain Gaillard, Antoine Schneider, Michel-Henry Fessy, Anthony Viste, Philippe Chaudier, Romain Desmarchelier, Tanguy Mouton, Cyril Courtin, Sébastien Martres, Franck Trouillet, Cédric Barrey, Francesco Signorelli, Emmanuel Jouanneau, Timothée Jacquesson, Ali Mojallal, Fabien Boucher, Hristo Shipkov, Joseph Chateau*
- **Anesthesiologists** – *Frédéric Aubrun, Isabelle Bobineau, Caroline Macabéo*
- **Microbiologists** – *Frederic Laurent, François Vandenesch, Jean-Philippe Rasigade, Céline Dupieux*
- **Imaging** – *Fabien Craighero, Loic Boussel, Jean-Baptiste Pialat*
- **Nuclear medicine** – *Isabelle Morelec, Marc Janier, Francesco Giammarile*
- **PK/PD specialists** – *Michel Tod, Marie-Claude Gagnieu, Sylvain Goutelle*
- **Prevention of infection** – *Solweig Gerbier-Colomban, Thomas Benet*
- **Clinical research assistant** – *Eugénie Mabrut*

