Clinical Trial Protocol
Iranian Registry of Clinical Trials

09 Jun 2026

Pharmacokinetics and safety of high-dose intravenous daptomycin in infected hemodialysis patients

Protocol summary

Summary

Study rationale: central venous catheters are commonly used in conventional dialysis [16.5% (4768 patients) of the patients undergoing hemodialysis in France in 2010]. Their main complication is Catheter related Blood Stream Infection (CRBSI), which is associated with substantial morbidity and mortality. Staphylococcus sp, particularly Meticillin Resistant Staphylococcus Aureus (MRSA) is frequently associated with CRBSI. Treatment is based on catheter withdrawal and anti-Staphylococci parenteral antibiotic therapy. Vancomycin is the first line treatment but Daptomycin is an alternative treatment when Minimum Inhibitory Concentrations (MIC) of Vancomycin are≥ 2 µg/ml. However, removal of the catheter is an important issue among patients on hemodialysis, and the prevalence of MRSA and Coagulase Negative Staphylococci (CoNS) with elevated MIC to Vancomycin is increasing. Before setting up a clinical study to assess Daptomycin efficacy and safety in hemodialysis patients with infected catheter, pharmacokinetics parameters need to be collected. This is the aim of this pilot pharmacokinetics study in this specific population. In such context, Daptomycin is an interesting alternative as it is effective in MRSA and CoNS infections, is well tolerated and has shown to penetrate into bio films in vitro (Raad AAC 2007 ; Aslam AJIC 2008, Leite CM 2011) which could be of advantage when treating infected devices. A few studies showed satisfying pharmacokinetics parameters among non-infected patients with conventional hemodialysis where Daptomycin was administered at 6mg/kg/dialysis. Daptomycin has been shown to be a concentration-dependent antibiotic, and the AUC/minimum inhibitory concentration (MIC) ratio is the PK-PD parameter that is most closely linked with antibacterial activity (Bowker 2009; Dandekar 2003; Louie 2001; Safdar 2004). However, there is no single optimal AUC/MIC ratio associated with maximal effect throughout the literature (Bowker 2009; Dandekar 2003; Louie 2001; Safdar 2004). In some patients, Falcone (CID 2013) observed an increased Daptomycin clearance and lower exposition to drug in critically ill patients, correlated with infection severity and MRSA bacteremia. Recent data suggest that 10mg/kg/d among patient without renal impairment is a preferred dosing to avoid resistance and maximize the antibacterial effect: indeed it seems to be the dose associated with the best benefit/risk ratio (Soon IJAA 2013), with good bacteriostatic and bactericidal activity on strains with MIC< 2 µg/mL, and low toxicity risk. However, data are scarse on Daptomycin at 10mg/kg among patients with gram positive infections on hemodialysis. Since the literature is inconclusive on the definitive AUC/MIC threshold, we need an AUC distribution resulting from dosing schemes under chronic hemodialysis, as it is the PK target the most closely linked to effect. It is therefore important to better characterize Daptomycin PK in infected patients on hemodialysis. Hence, we evaluate the pharmacokinetics of Daptomycin at 10mg/kg after each of 3 consecutive dialysis sessions among patients with central catheter related blood stream infections on hemodialysis.

General information

Acronym

DaptoHD

IRCT registration information

IRCT registration number: **IRCT2016101730345N1**
Registration date: **2016-10-30, 1395/08/09**
Registration timing: **retrospective**

Last update:
Update count: **0**

Registration date

2016-10-30, 1395/08/09

Registrant information

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Recruitment status
Recruitment complete
Funding source
None

Expected recruitment start date
2011-08-31, 1390/06/09
Expected recruitment end date
2015-01-31, 1393/11/11
Actual recruitment start date
empty
Actual recruitment end date
empty
Trial completion date
empty

Scientific title
Pharmacokinetics and safety of high-dose intravenous daptomycin in infected hemodialysis patients

Public title
Daptomycin at high dose for hemodialysis patient
Purpose
Treatment
Inclusion/Exclusion criteria
Inclusion: patients > 18 years, requiring conventional hemodialysis for chronic renal failure hospitalized at the University Hospital of Poitiers (CHU de Poitiers) and presenting a CRBSI. Exclusion: pregnant or breeding women, pneumonia, septic shock (which may affect pharmacokinetic parameters and therefore not represent the principal hemodialysis population); CPK >3ULN; known hypersensitivity to Daptomycin.
Age
From **18 years** old
Gender
Both

Phase
0
Groups that have been masked
No information
Sample size
Target sample size: **10**
Randomization (investigator's opinion)
N/A
Randomization description
Blinding (investigator's opinion)
Not blinded
Blinding description
Placebo
Not used
Assignment
Single

Other design features
Pharmacokinetics

Secondary Ids

empty

Ethics committees

1

Ethics committee
Name of ethics committee
CPP Ouest III
Street address
CHU de Poitiers
City
Poitiers
Postal code
86000
Approval date
2011-02-01, 1389/11/12
Ethics committee reference number
n° 13.10.33

Health conditions studied

1

Description of health condition studied
Catheter related blood stream infection
ICD-10 code
T80-211
ICD-10 code description
Catheter-related bloodstream infection (CRBSI)

Primary outcomes

1

Description
Pharmacokinetics of Daptomycin at 10 mg/kg after dialysisin conventional hemodialysis in patients with central catheter related infections
Timepoint
1 week
Method of measurement
Cmax, Cmin, AUC

Secondary outcomes

1

Description
To evaluate clinical parameters (physical examination, vital signs and temperature) in order to monitor infection evolution and side effects in relation to Daptomycin treatment.
Timepoint
2 weeks
Method of measurement

Cinical examination

Intervention groups

1

Description

Patient on hemodialysis (regimen 2/2/3) with suspected CRBSI will be treated with Daptomycin at 10mg/kg immediately after dialysis (2 minutes intravenous infusion). Area under curve for 48h (AUC48h), AUC72h, Cmax, C0.5h (30 min after infusion) and Cmin will be determined. Pharmacokinetics parameters will be documented during the first 3 Daptomycin injections with blood sampling at 2 min, 1h, 2h, 4h, 12h, 24h, 44h (immediately before the next dialysis) and at 48h (immediately after completion of dialysis and before the next dose) after each injection. A 72h point will be added if the interval between two subsequent hemodialysis sessions and therefore also the Daptomycin injection interval of Daptomycin is 72 h. Treatment will be adapted according to microbiological results.Treatment duration is determined by the investigator according to medical need and microbiology. Catheter removal will be determined by the investigator according to infection severity, microbiology when available (systematic removal in case of Candida or Pseudomonas aeruginosa infections), and possibilities to create another vascular access if needed (hemodialysis catheters being vital for these patients, a conservative approach can be used as described by ERA-EDTA guidelines in 2007 and the Infectious Diseases Society of America in 2009). If the catheter is left in place, antiseptic lock (taurolidin) will be used at the end of each hemodialysis session.

Category

Treatment - Drugs

Recruitment centers

1

Recruitment center

Name of recruitment center
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POITIERS

Sponsors / Funding sources

1

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POITIERS
Grant name
Grant code / Reference number
Is the source of funding the same sponsor organization/entity?
Yes
Title of funding source
CHU de Poitiers
Proportion provided by this source
100
Public or private sector
empty
Domestic or foreign origin
empty
Category of foreign source of funding
empty
Country of origin
Type of organization providing the funding
empty

Person responsible for general inquiries

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Sharing plan

Deidentified Individual Participant Data Set (IPD)
empty
Study Protocol
empty
Statistical Analysis Plan
empty
Informed Consent Form
empty
Clinical Study Report
empty
Analytic Code
empty
Data Dictionary
empty