Does continuous cefotaxime administration improve time to attainment and maintenance of target drug levels in intensive care patients?

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Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Bacterial infectious disorders
Study type	Observational non invasive

Summary

ID

NL-OMON41771

Source
ToetsingOnline

Brief title
Cefotaxime target attainment

Condition

- Bacterial infectious disorders

Synonym
bacterial pneumonia, selective decontamination of the digestive tract

Research involving
Human

Sponsors and support

Primary sponsor: Universitair Medisch Centrum Groningen

Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Cefotaxime, critical care, pharmacokinetics, target attainment

Outcome measures

Primary outcome

Total bound and unbound plasma concentrations of cefotaxime; target attainment and maintenance at different time intervals based on a predefined target minimal inhibitory concentration (MIC)

Secondary outcome

Describing cefotaxime PK parameters

Parameters relevant to pharmacokinetic profile of subjects; including ideal body weight (kgs), actual body weight (kgs), fluid balance (L), creatinine (mg/mL), creatinine clearance (mL/min), derived from creatinine concentration in plasma and a 24-hour aliquot of urine, volume of distribution (total drug dose (mgs) divided by plasma cefotaxime concentration (mg/L)), albumin (mg/mL).

To identify relationships between patient characteristics (e.g. APACHE II score, serum albumin concentration, kidney function etc.) and cefotaxime levels that can contribute to optimized dosing in selected patientgroups using multiple regression.

Study description

Background summary

Critically ill patients have other pharmacokinetic/pharmacodynamic profiles than healthy volunteers. Suboptimal, both under- and overdosing of antibiotics

is an important threat in this patient category. Given the time-dependent character of beta-lactam antibiotics continuous dosing as opposed to traditional intermittent dosing is likely to render better target attainment and maintenance and might improve clinical outcome.

Study objective

The main objective is to assess target attainment of cefotaxime levels in the critically ill treated with either continuously or intermittently dosed cefotaxime. Secondary objectives are: to develop a predictive mathematical pharmacokinetic (PK) model of cefotaxime in the critically ill; to identify relationships between patient characteristics (e.g. APACHE II score, serum albumin concentration, kidney function etc.) and cefotaxime levels that can contribute to optimized dosing in selected patientgroups using multiple regression.

Study design

Prospective randomized controlled single centre study

Study burden and risks

Patients will be randomized into one of two treatment-arms; one with intermittent dosing; one with continuous dosing. Both intermittent and continuous dosing are currently options in our protocol for routine administration. Blood samples will be drawn on predefined time points after drug administration through an arterial line placed for routine patient management. Maximum amount of blood drawn for this study will be 28 mL (8 samples of 2 mL on day 1; 2 samples of 2 mL on day 2 - 4).
Besides the drawing of blood for cefotaxime blood concentration analysis and anonymous data-collection, in this study patients will not be subjected to any other intervention.
The risks for subjects included in this study are considered to be minor: small volume blood samples are drawn from an indwelling catheter.
No benefits are to be expected for human subjects in this experiment. This study can, however, contribute to optimized dosing of cefotaxime in the critically ill through enhanced knowledge of pharmacokinetics/pharmacodynamics in this specific patient category.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

- Adult (>= 18 yrs. of age) patients
- Admitted to intensive care
- Indication for treatment with cefotaxime (as judged by treating physician)

Exclusion criteria

Renal replacement therapy
Contraindications for cefotaxime use
No indication for an arterial line

Study design

Design

Study type:	Observational non invasive
Intervention model:	Parallel
Allocation:	Randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	10-12-2015
Enrollment:	60
Type:	Actual

Ethics review

Approved WMO

Date:	12-06-2015
Application type:	First submission
Review commission:	METC Universitair Medisch Centrum Groningen (Groningen)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL50809.042.14