Comparing the incidence of acute renal failure in patients with epilepsy exposed to levetiracetam versus other antiepileptic drugs

First published: 29/11/2018

Last updated: 23/04/2024

Study Finalised

Administrative details

EU PAS number

EUPAS26595

Study ID

44245

DARWIN EU® study

No

Study countries

United States

Study description

This study is being conducted to compare the incidence of acute renal failure in patients with epilepsy exposed to levetiracetam versus other antiepileptic drugs in order to further review the association between exposure to levetiracetam and acute renal failure using real world data from a claim database in the US.

Study status

Finalised

Contact details

Study institution contact

Clinical Trial Registries and Results Personal identifiable data of lead investigator are not published here, as consent according to Section 4a of the German Federal Act on Data Protection is not available. clinicaltrials@ucb.com

Study contact

clinicaltrials@ucb.com

Primary lead investigator

Clinical Trial Registries and Results Personal identifiable data of lead investigator are not published here, as consent according to Section 4a of the German Federal Act on Data Protection is not available.

Primary lead investigator

Study timelines

Date when funding contract was signed

Planned: 15/11/2018

Actual: 15/11/2018

Study start date

Planned: 01/04/2020

Actual: 01/04/2020

Data analysis start date

Planned: 30/04/2020

Actual: 30/04/2020

Date of final study report

Planned: 30/06/2020

Actual: 30/06/2020

Sources of funding

- Pharmaceutical company and other private sector

More details on funding

UCB Pharma SA

Study protocol

EPD172 database-study-acute-kidney-injury protocol V1.0.pdf (1.63 MB)

Regulatory

Was the study required by a regulatory body?

No

Is the study required by a Risk Management Plan (RMP)?

Not applicable

Methodological aspects

Study type

Study type list

Study topic:

Disease /health condition

Human medicinal product

Study type:

Non-interventional study

Scope of the study:

Assessment of risk minimisation measure implementation or effectiveness

Data collection methods:

Secondary use of data

Main study objective:

This study is being conducted compare the incidence rate of acute renal failure among patients exposed to levetiracetam versus other antiepileptic drugs (AEDs) (as monotherapy or polytherapy) to further characterize the risk of acute renal failure in patients treated with AEDs.

Study Design

Non-interventional study design

Cohort

Study drug and medical condition

Study drug International non-proprietary name (INN) or common name

LEVETIRACETAM

Medical condition to be studied

Epilepsy

Population studied

Short description of the study population

US population of patients with an epilepsy diagnosis as defined in Section 9.2.2.1 , with a new prescription of LEV or comparator AEDs, as monotherapy or polytherapy. The following 12 AED monotherapy comparator cohorts will be evaluated in the study: lamotrigine, phenytoin, valproic acid, carbamazepine, gabapentin, topiramate, oxcarbazepine, pregabalin, phenobarbital, zonisamide, lacosamide and ethosuximide. The “monotherapy” analysis includes patients who are AED naïve for at least one year (baseline)and start a new treatment of LEV or of one of the other AEDs listed above. For polytherapy, two cohorts will be evaluated; patients on a LEV-based polytherapy regimen will be compared with a cohort of patients on all other AED polytherapy regimens that do not include LEV as explained in the “polytherapy” definition (see Section 9.3.3.1). These patients are being treated by any AEDs (one or several, except levetiracetam) during the year preceding the index date when a new treatment of AED (different from those given during baseline) is introduced.

Epilepsy diagnosis Patients will be classified as having an epilepsy diagnosis if they fulfil any of the criteria indicated below: • The presence of ≥ 2 ICD-9-CM codes of 780.39 (seizure symptoms) during separate medical encounters, specifically different dates of care in any medical care venue that are separated by at least 1 day • An occurrence of ≥1 ICD-9-CM code of 780.39 AND ≥1 ICD-9-CM code of 345.xx (excluding 345.3) during separate medical encounters, specifically different dates of care in any medical care venue that are at least 1 day apart, when the first code identified during the baseline period is 780.39 • An occurrence of at least one ICD-9-CM code of 345.xx (excluding 345.3) • Patients with ICD-9-CM code of 345.3 will be required to have
- an occurrence of ≥2 ICD-9-CM codes of 345.3 separated by at least 30 days
- or an occurrence of the ICD-9-CM code 780.39 followed by 345.3 code and separated by at least 3

Age groups

- Adolescents (12 to < 18 years)
- Children (2 to < 12 years)
- Infants and toddlers (28 days – 23 months)
- Adults (18 to < 46 years)
- Adults (46 to < 65 years)
- Adults (65 to < 75 years)
- Adults (75 to < 85 years)
- Adults (85 years and over)

Special population of interest

Other

Special population of interest, other

Epilepsy patients

Estimated number of subjects

3000

Study design details

Outcomes

The primary outcome of this study is to compare the incidence rate of acute renal failure among patients exposed to levetiracetam (LEV) or comparator antiepileptic drugs (AEDs) (as monotherapy or polytherapy).

Data analysis plan

The modified Poisson regression model with robust variance estimator will be used to estimate the Incidence Rates (IRs) and Incidence Rate Ratio (IRR) of acute renal failure. The crude IR and 95% confidence intervals (CI) will be calculated as the number of new cases per 10,000 person-years of follow-up and reported separately for each Antiepileptic drug (AED) treatment cohort. Crude IRRs and 95% CI based on unweighted samples will be computed to compare the IR of acute renal failure between Levetiracetam (LEV) and each comparator AED cohort. Thereafter, to control for confounding, modified Poisson regression model with robust variance estimator will be constructed based on stabilized Inverse Probability of Treatment Weights weighted samples. The stabilized weights will be applied as exposure weights in the analysis to generate final adjusted effect measure estimates. For each analysis, the comparator cohort will be the reference group.

Documents

Study results

CSR EUPAS26595 -Redacted.pdf (6.87 MB)

EUPAS26595-csr-redacted.pdf (2.92 MB)

Data management

The use of the ENCePP Seal has been discontinued since February 2025. The ENCePP Seal fields are retained in the display mode for transparency but are no longer maintained.

Data sources

Data sources (types)

Administrative healthcare records (e.g., claims)

Use of a Common Data Model (CDM)

CDM mapping

No

Data quality specifications

Check conformance

Unknown

Check completeness

Unknown

Check stability

Unknown

Check logical consistency

Unknown

Data characterisation

Data characterisation conducted

No