Effect of the “Triple whammy” in hospitalization due to acute kidney injury: a case-control study nested in a cohort

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Study Planned

Administrative details

EU PAS number

EUPAS35832

Study ID

42755

DARWIN EU® study

No

Study countries

☐ Spain

Study description

Background: the term “triple whammy” refers to the simultaneous use of diuretics, renin-angiotensin-aldosterone system inhibitors (angiotensin-converting enzime inhibitors (ACEI) and angiotensin II receptor blockers (ARBs)) and nonsteroidal anti-inflammatory drugs (NSAIDs). The use of this combination has been associated with an increased risk of kidney injury (AKI). Main objective: to analyze the incidence of hospitalization due to AKI associated to the exposure to the “triple whammy” combination versus non-exposure to that combination. Secondary objectives: 1) To assess the risk of hospitalization due to AKI with the combination "triple whammy" that includes metamizole versus the combination that includes an NSAID different to metamizole, 2) To evaluate the risk of hospitalization due to AKI based on the time window from the index date and according to its duration, 3) To determine the risk of requiring renal replacement therapy and mortality associated to the "triple whammy" combination.

Study status

Planned

Research institutions and networks

Institutions

Navarre Health Service

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Institution

Contact details

Study institution contact

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Study contact

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Primary lead investigator

Leire Leache

Primary lead investigator

Study timelines

Date when funding contract was signed

Planned: 18/11/2019

Study start date

Planned: 03/05/2021

Data analysis start date

Planned: 01/10/2021

Date of interim report, if expected

Planned: 31/12/2021

Date of final study report

Planned: 31/03/2021

Sources of funding

- Other

More details on funding

Government of Navarre

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 type:

Non-interventional study

Scope of the study:

Assessment of risk minimisation measure implementation or effectiveness

Main study objective:

To analyze the incidence of hospitalization due to acute kidney injury (AKI) associated to the exposure to the “triple whammy” combination versus non-

exposure to that combination.

Study Design

Non-interventional study design

Case-control

Study drug and medical condition

Anatomical Therapeutic Chemical (ATC) code

(C03) DIURETICS

DIURETICS

(C09) AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM

AGENTS ACTING ON THE RENIN-ANGIOTENSIN SYSTEM

(M01AE53) ketoprofen, combinations

ketoprofen, combinations

(N02BB02) metamizole sodium

metamizole sodium

Medical condition to be studied

Acute kidney injury

Population studied

Age groups

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

Renal impaired

Estimated number of subjects

1000

Study design details

Outcomes

Incidence of hospitalization due to acute kidney injury (AKI) associated to the exposure to the “triple whammy” combination versus non-exposure to that combination. 1) Hospitalization due to AKI with the combination "triple whammy" that includes metamizole versus the combination that includes an NSAID different to metamizole 2) Hospitalization due to AKI based on the time window from the index date and according to its duration 3) Incidence of requiring renal replacement therapy and mortality associated to the "triple whammy" combination.

Data analysis plan

The comparison of categorical variables between cases and controls will be analyzed through the Chi-square test or Fisher's test, and in the case of quantitative variables through the t-Student or Mann-Whitney test. The association between the exposure and the risk of hospitalization due to AKI will be analyzed using conditional logistic regression models, adjusting for possible confounding factors. The adjusted Odds Ratio and 95% confidence interval will be estimated. The risk of hospitalization due to AKI will be determined

according to the time of exposure to the "triple whammy" combination ("current users" vs "recent users" vs "past users"), the "continuous duration" and the "cumulative duration" of this association (≤3 months, >3 and ≤6 months, >6 and ≤9 months and >9 months and ≤12 months), compared with no exposure to this association. Additionally, the main variable will be analyzed in the subgroup of patients over 75 years of age.

Data management

ENCePP Seal

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 source(s), other

BIFAP Spain

Data sources (types)

Disease registry

Electronic healthcare records (EHR)

Other

Data sources (types), other

Exposure registry, Case-control surveillance database

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