Clinical trial results:
Randomized, controlled interventional trial to investigate the efficacy of amiloride for the treatment of edema in human nephrotic syndrome

Summary

EudraCT number	2019-002607-18
Trial protocol	DE
Global end of trial date	30 April 2023

Results information

Result version number	v1 (current)
This version publication date	27 June 2024
First version publication date	27 June 2024
Summary attachment (see zip file)	Publication (Schork_Acta Physiologica_2024_Amiloride vs furosemide for treatemnt of edema in NS.pdf)

Trial information

Trial identification

Sponsor protocol code	AmiloridNS-01

Additional study identifiers

ISRCTN number	-
ClinicalTrials.gov id (NCT number)	NCT05079789
WHO universal trial number (UTN)	-

Notes:

Sponsors

Sponsor organisation name	University Hospital Tuebingen
Sponsor organisation address	Geissweg 3, Tuebingen, Germany, 72076
Public contact	Secretary's office Dep. Int.Med. IV, Univerity Hospital Tuebingen, +49 707129 83172,
Scientific contact	Secretary's office Dep. Int.Med. IV, Univerity Hospital Tuebingen, +49 707129 83172,

Notes:

Paediatric regulatory details

Is trial part of an agreed paediatric investigation plan (PIP)	No
Does article 45 of REGULATION (EC) No 1901/2006 apply to this trial?	No
Does article 46 of REGULATION (EC) No 1901/2006 apply to this trial?	No

Notes:

Results analysis stage

Analysis stage	Final
Date of interim/final analysis	02 February 2024
Is this the analysis of the primary completion data?	Yes
Primary completion date	30 April 2023
Global end of trial reached?	Yes
Global end of trial date	30 April 2023
Was the trial ended prematurely?	Yes

Notes:

General information about the trial

Main objective of the trial:

Objective of the study is to prove the efficacy and superiority of amiloride for reduction of edema and overhydration in human nephrotic syndrome in comparison to standard medication with furosemide.

Protection of trial subjects:

No further follow up is necessary for this Phase IIIB study after completion of the follow up period according to the study protocol.

Background therapy: -

Evidence for comparator: -

Actual start date of recruitment	08 June 2020
Long term follow-up planned	No
Independent data monitoring committee (IDMC) involvement?	No

Notes:

Population of trial subjects

Subjects enrolled per country

Country: Number of subjects enrolled	Germany: 20
Worldwide total number of subjects	20
EEA total number of subjects	20

Notes:

Subjects enrolled per age group

In utero	0
Preterm newborn - gestational age < 37 wk	0
Newborns (0-27 days)	0
Infants and toddlers (28 days-23 months)	0
Children (2-11 years)	0
Adolescents (12-17 years)	0
Adults (18-64 years)	17
From 65 to 84 years	3
85 years and over	0

Subject disposition

Recruitment	
Recruitment details: -	
Pre-assignment	
Screening details: -	
Pre-assignment period milestones	
Number of subjects started	20
Number of subjects completed	20

Period 1	
Period 1 title	Period 1 (overall period)
Is this the baseline period?	Yes
Allocation method	Randomised - controlled
Blinding used	Not blinded
Arms	
Are arms mutually exclusive?	Yes
Arm title	Amiloride
Arm description: -	
Arm type	Experimental
Investigational medicinal product name	Amiloride
Investigational medicinal product code	
Other name	Modamide®
Pharmaceutical forms	Tablet
Routes of administration	Oral use
Dosage and administration details: initial dose 5 mg once daily, maximum dose 15 mg once daily	
Arm title	Furosemide
Arm description: -	
Arm type	Active comparator
Investigational medicinal product name	Furosemide
Investigational medicinal product code	
Other name	
Pharmaceutical forms	Tablet
Routes of administration	Oral use
Dosage and administration details: initial dose 40 mg once daily, maximum dose 120 mg once daily	

Number of subjects in period 1	Amiloride	Furosemide
Started	10	10
Completed	10	10

Baseline characteristics

End points

End points reporting groups	
Reporting group title	Amiloride
Reporting group description: -	
Reporting group title	Furosemide
Reporting group description: -	

Primary: Primary end point: decrease of overhydration (OH) at day 8	
End point title	Primary end point: decrease of overhydration (OH) at day 8
End point description: decrease of overhydration (OH) at day 8	
End point type	Primary
End point timeframe: 8 days	

End point values	Amiloride	Furosemide		
Subject group type	Reporting group	Reporting group		
Number of subjects analysed	10	10		
Units: % of extracellular water (ECW)				
median (inter-quartile range (Q1-Q3))	1.95 (0.8 to 6.4)	5.15 (0.9 to 8.3)		

Statistical analyses

Statistical analysis title	Analysis of primary endpoint
Comparison groups	Amiloride v Furosemide
Number of subjects included in analysis	20
Analysis specification	Pre-specified
Analysis type	superiority
P-value	= 0.38
Method	t-test, 1-sided

Adverse events

Adverse events information

Timeframe for reporting adverse events:

23 days for everey subject.

Assessment type	Non-systematic

Dictionary used

Dictionary name	CTCAE
Dictionary version	2012/C 302

Reporting groups

Reporting group title	Amiloride
Reporting group description: -	
Reporting group title	Furosemide

Reporting group description: -

Serious adverse events	Amiloride	Furosemide	
Total subjects affected by serious adverse events			
subjects affected / exposed	1 / 10 (10.00%)	4 / 10 (40.00%)	
number of deaths (all causes)	0	0	
number of deaths resulting from adverse events	0	0	
Surgical and medical procedures			
delayed discharge from hospital due to macrohematuria after kidney biopsy			
subjects affected / exposed	1 / 10 (10.00%)	0 / 10 (0.00%)	
occurrences causally related to treatment / all	0 / 1	0 / 0	
deaths causally related to treatment / all	0 / 0	0 / 0	
Cardiac disorders			
myocardial infarction			
subjects affected / exposed	0 / 10 (0.00%)	1 / 10 (10.00%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
pericardial effusion with in-hospital monitoring			
subjects affected / exposed	0 / 10 (0.00%)	1 / 10 (10.00%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Gastrointestinal disorders			
abdominal pain with diarrhea with in-hospital treatment			

subjects affected / exposed	0 / 10 (0.00%)	1 / 10 (10.00%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	
Renal and urinary disorders			
AKI stage 2 with in-hospital treatment			
subjects affected / exposed	0 / 10 (0.00%)	1 / 10 (10.00%)	
occurrences causally related to treatment / all	0 / 0	0 / 1	
deaths causally related to treatment / all	0 / 0	0 / 0	

Frequency threshold for reporting non-serious adverse events: 5 %

Non-serious adverse events	Amiloride	Furosemide	
Total subjects affected by non-serious adverse events			
subjects affected / exposed	9 / 10 (90.00%)	10 / 10 (100.00%)	
Surgical and medical procedures			
planned hospitalization for kidneybiopsy			
subjects affected / exposed	2 / 10 (20.00%)	3 / 10 (30.00%)	
occurrences (all)	2	3	
Nervous system disorders			
dizziness			
subjects affected / exposed	0 / 10 (0.00%)	1 / 10 (10.00%)	
occurrences (all)	0	1	
headache			
subjects affected / exposed	0 / 10 (0.00%)	1 / 10 (10.00%)	
occurrences (all)	0	1	
Gastrointestinal disorders			
nausea			
subjects affected / exposed	2 / 10 (20.00%)	0 / 10 (0.00%)	
occurrences (all)	2	0	
Respiratory, thoracic and mediastinal disorders			
epistaxis			
subjects affected / exposed	1 / 10 (10.00%)	1 / 10 (10.00%)	
occurrences (all)	1	1	
Hepatobiliary disorders			

elevated liver enzymes subjects affected / exposed occurrences (all)	0 / 10 (0.00%) 0	1 / 10 (10.00%) 1	
Skin and subcutaneous tissue disorders rash subjects affected / exposed occurrences (all)	0 / 10 (0.00%) 0	1 / 10 (10.00%) 1	
Renal and urinary disorders urinary infection subjects affected / exposed occurrences (all) hypervolemia (worsening) subjects affected / exposed occurrences (all)	1 / 10 (10.00%) 1 1 / 10 (10.00%) 1	0 / 10 (0.00%) 0 0 / 10 (0.00%) 0	
Musculoskeletal and connective tissue disorders cramps of legs and hands subjects affected / exposed occurrences (all)	0 / 10 (0.00%) 0	1 / 10 (10.00%) 1	
Infections and infestations SARS CoV 2 infection subjects affected / exposed occurrences (all)	2 / 10 (20.00%) 2	1 / 10 (10.00%) 1	

More information

Substantial protocol amendments (globally)

Were there any global substantial amendments to the protocol? No

Interruptions (globally)

Were there any global interruptions to the trial? No

Limitations and caveats

None reported