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Fluid restriction versus 0.9% saline infusion in the treatment of hyponatraemia due to the syndrome of inappropriate antidiuresis in patients with pneumonia

Submission date 25/01/2018	**Recruitment status** No longer recruiting	[X] Prospectively registered [_] Protocol
Registration date 29/01/2018	**Overall study status** Stopped	[_] Statistical analysis plan [_] Results
Last Edited 03/07/2020	**Condition category** Respiratory	[_] Individual participant data [_] Record updated in last year

Plain English summary of protocol

Background and study aims
Pneumonia is a lung infection which is visible on xray, and can be accompanied by a drop in sodium levels in the blood in up to 30% of patients. This can be due to a condition called syndrome of inappropriate antidiuresis (SIAD). SIAD occurs when infection triggers inappropriately high levels of a hormone called vasopressin leading to a fall in sodium levels. The recommended treatment for SIAD is to limit the amount of fluid a person takes per day – this is called fluid restriction – and the administration of intravenous fluids is generally not recommended. However, research has shown that sodium levels improve at the exact same rate in patients with SIAD treated with fluid restriction and those given intravenous fluids. Futhermore, research carried out by our research team in Beaumont Hospital suggests that patients with SIAD may have blood pressure which is lower than their baseline to start off with, and therefore fluid restriction may not be appropriate. In this study patients are randomly assigned to either fluid restriction or normal saline - this is the best way of determining the effect of these treatments on sodium levels and blood pressure. The intervention will last three days. By doing this research study, it is hoped to find out if one treatment is better than the other at improving sodium levels in patients with pneumonia and SIAD and to determine the effects of these interventions on blood pressure and patient well-being.

Who can participate?
Adults aged 18 and older who have SIAD.

What does the study involve?
Once informed consent has been acquired, participants are randomly allocated to one of two groups. Those in the first group are instructed to limit total fluid intake to 1 liter per 24 hours. This includes intravenous medications and oral intake. Those in the second group will receive 2 liters of intravenous 0.9% saline over 24 hours, and no restrictions on oral intake will be recommended. The intervention period lasts for 72 hours.

What are the possible benefits and risks of participating?
By taking part in this study, participants are reviewed regularly by a doctor with special interest in low sodium. Blood sodium levels are monitored daily. Sodium level may correct too quickly; if this happens we will administer dilute intravenous fluid to slow the rate of correction. On the other hand, sodium level may decrease. If this happens, the participant will withdrawn from the study and treated as per usual best clinical practice.

Where is the study run from?
Beaumont Hospital (Ireland)

When is the study starting and how long is it expected to run for?
August 2017 to August 2019

Who is funding the study?
Beaumont Hospital Endocrinology Research Fund (Ireland)

Who is the main contact?
Professor Chris Thompson (Scientific)

Contact information

Type(s)
Scientific

Contact name
Prof Chris Thompson

Contact details
Academic Department of Endocrinology / RCSI
Beaumont Hospital
Dublin 9
Ireland
9

Additional identifiers

EudraCT/CTIS number

IRAS number

ClinicalTrials.gov number

Secondary identifying numbers
3

Study information

Scientific Title

A prospective randomised comparison of the effects of fluid restriction versus 0.9% saline infusion on plasma sodium and blood pressure in patients with pneumonia complicated by SIAD (syndrome of inappropriate antidiuresis)

Study objectives
Normal saline infusion is non-inferior to fluid restriction in correcting plasma sodium in patients with SIAD due to pneumonia, and is associated with improvements in blood pressure and self-reported well-being.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Beaumont Hospital Research Ethics Committee, 10/11/2017, ref: REC REF 17/79

Study design
Prospective unblinded randomised controlled trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
Not available in web format, please use the contact details to request a patient information sheet

Health condition(s) or problem(s) studied
Syndrome of inappropriate antidiuresis secondary to pneumonia

Interventions
Once informed consent has been acquired, participants are randomised to either fluid restriction or 0.9% saline infusion using a computer generated randomisation table using random permutated blocks of four. Patients randomised to fluid restriction are instructed to limit total fluid intake to 1 liter per 24 hours. This includes intravenous medications and oral intake. Those randomised to 0.9% saline infusion receive 2 liters of intravenous 0.9% saline over 24 hours, and no restrictions on oral intake will be recommended. The intervention period lasts for 72 hours. In total there are four assessments (day 1, 2, 3, 4).

Intervention Type
Other

Primary outcome measure

1. Change in plasma sodium from baseline to day 4 (plasma sodium is measured using ion-selective electrode)
2. Change in blood pressure from baseline to day 4 (blood pressure is measured using amubulatory blood pressure monitoring on day 1 and day 3, and using office BP monitoring daily)

Secondary outcome measures
1. Proportion of patients achieving eunatraemia daily
2. Length of hospital stay, measured using the hospital database, up until time of discharge
3. Patient reported outcome (well-being), measured using the SF-12 and EQ-5D questionnaires, at baseline and day 4

Overall study start date
01/08/2017

Completion date
01/10/2020

Reason abandoned (if study stopped)
Participant recruitment issue

Eligibility

Key inclusion criteria
1. Age > 18 years
2. Eu-volemic
3. New asymptomatic hyponatraemia with plasma sodium 120 - 130 mmol/L
4. Biochemical confirmation of SIAD, including exclusion of adrenal insufficiency and hypothyroidism.
5. Radiographic confirmation of pneumonia
6. Clinical confirmation of pneumonia
7. Systolic blood pressure > 100 mmHg

Participant type(s)
Patient

Age group
Adult

Lower age limit
18 Years

Sex
Both

Target number of participants
40

Key exclusion criteria
1. Symptomatic or severe hyponatraemia (plasma sodium < 120 mmol/L)
2. Volume depletion / hypovolaemia / systolic BP < 100 mmHg

3. CCF
4. Uncontrolled hyperglycemia
5. AKI
6. Diuretic therapy
7. Clinical imperative for intravenous fluids
8. Chronic hyponatraemia

Date of first enrolment
01/02/2018

Date of final enrolment
01/07/2020

Locations

Countries of recruitment
Ireland

Study participating centre
Beaumont Hospital
Beaumont Road
Dublin
Ireland
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Sponsor information

Organisation
Beaumont Hospital

Sponsor details
Academic Department of Endocrinology / RCSI
Beaumont Hospital
Dublin 9
Ireland
9

Sponsor type
Hospital/treatment centre

ROR
https://ror.org/043mzjj67

Funder(s)

Funder type
Hospital/treatment centre

Funder Name
Beaumont Hospital Endocrinology Research Fund

Results and Publications

Publication and dissemination plan
Plans to publish results in a high-impact peer-reviewed journal, with an intended date of 01/08/2020.

Intention to publish date
01/01/2021

Individual participant data (IPD) sharing plan
Participant level data generated in this study will be available on request from Professor Chris Thompson (principle investigator). Data will be coded, and stored on the hospital secure electronic database.

IPD sharing plan summary
Available on request