ISRCTN13300160 https://doi.org/10.1186/ISRCTN13300160

Dulaglutide for peritoneal dialysis in diabetic kidney disease

Submission date	Recruitment status	[ ] Prospectively registered
19/10/2022	Recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
26/10/2022	Ongoing	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
24/10/2022	Nutritional, Metabolic, Endocrine	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims
Taiwan has the highest rate of end-stage kidney disease or kidney failure in the world. Co-existing disease, inadequate dialysis and uremic solutes accumulate are the serious risk factors for death in patients with end-stage kidney disease. Renal replacement therapy is a therapy for patients with kidney failure that replaces kidney function. It includes hemodialysis, peritoneal dialysis, and kidney transplant. Unlike haemodialysis, an advantage of peritoneal dialysis is that it can be done at home/work without assistance, and it is better than haemodialysis to patients on maintenance dialysis. However, inadequate dialysis is the common fate in diabetic patients who receive peritoneal dialysis

Previously, we have demonstrated that gut hormones-based treatment [i.e., dipeptidyl peptidase-4 (DPP-4) inhibitors or glucagon-like peptide 1 (GLP-1) agonist] increased in GLP-1 levels, in further saved the peritoneal function from peritoneal fibrosis (scar tissue) in animal study. Currently, there remains a lack of effective method for recovering the function of peritoneum in peritoneal dialysis patients. Therefore, to confirm the effectiveness of GLP1 agonist on “early prevention” of peritoneal dialysis failure is very important. The current study will test whether dulaglutide treatment will maintain the structural and functional integrity of the peritoneal membrane in peritoneal dialysis.

Who can participate?
Diabetic PD patients aged 20 - 75 years, who started PD over 3 months previously

What does the study involve?
The patients will be randomly allocated into treatment group (dulaglutide/0.75mg adjust to 1.5 mg/QW; n=30) and control group (standardized pharmacotherapy only; n=30).

What are the possible benefits and risks of participating?
Potential benefits:
1. They may get a new treatment for a disease before it is available to everyone.
2. They play a more active role in their own health care.
3. Doctors and other health professionals may provide them with medical care and more frequent health check-ups as part of their treatment.

4. The study may help reduce the indicines of ultrafiltration failure and peritoneal dialysis failure, and peritonitis rate.
Potential risks:
1. There may be minor discomfort, or side effects to experimental treatment.
2. The study may require more time and attention than standard treatment would, including visits to the study site, more urine/blood tests, more treatments, or complex dosage schedules.

Where is the study run from?
Kaohsiung Chang Gung Memorial Hospital (Taiwan)

When is the study starting and how long is it expected to run for?
January 2021 to December 2026

Who is funding the study?
Kaohsiung Chang Gung Memorial Hospital (Taiwan)
National Science and Technology Council (Taiwan)

Who is the main contact?
Dr Hon-Kan Yip, han.gung@msa.hinet.net

Contact information

Type(s)
Public

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Additional identifiers

EudraCT/CTIS number
Nil known

IRAS number

ClinicalTrials.gov number
Nil known

Secondary identifying numbers
Nil known

Study information

Scientific Title
To investigate the therapeutic impact of dulaglutide on preventing peritoneal dialysis dysfunction: a randomized, open-Label, controlled clinical trial and animal model

Study objectives
Dulaglutide may preserve the kidney functional integrity in diabetic kidney disease patient with peritoneal dialysis

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 23/09/2021, Chang Gung Medical Foundation IRB (No. 199, Dunhua N. Rd., Songshan Dist., Taipei City 105406, Taiwan (R.O.C.); +886-3-3196200 ext.3705; tsengshui@cgmh.org.tw), ref: 202101696A3

Study design
Prospective single center interventional trial

Primary study design
Interventional

Secondary study design
Randomised controlled trial

Study setting(s)
Hospital

Study type(s)
Treatment

Participant information sheet
No participant information sheet available

Health condition(s) or problem(s) studied
Diabetes and peritoneal dialysis

Interventions
We will prospectively and consecutively enroll the diabetic peritoneal dialysis patients (n=60) to participate this clinical trial. Study subjects will be randomly allocated by sealed envelope into the treatment group (dulaglutide/0.75 mg adjust to 1.5 mg/QW; n=30) and the control group (standardized pharmacotherapy, including antihyperglycemic medicines; n=30).

The dulaglutide therapy will be maintained for one year, and the patients will be followed up for one year to answer the primary and secondary endpoints.

Intervention Type
Drug

Phase
Phase I

Drug/device/biological/vaccine name(s)
Dulaglutide

Primary outcome measure
1. Change from Baseline in the Mean Peritoneal Fluid Glucose ratio (D4/D0) after 12 Months of Treatment with Dulaglutide.
[Time Frame: baseline, 6 months and 12 months]
The mean glucose concentrations will be evaluated by the Peritoneal Equilibrium Test from Baseline and after 6 and 12 months with Dulaglutide treatment. The peritoneal equilibration test (PET) characterizes the peritoneal transport of fluid, creatinine and urea using a 4.5% dextrose peritoneal fluid. The concentration of glucose in the dialysis fluid (D4) at 4 hours is divided by the glucose in the dialysis fluid at the beginning (D0), generating the D4/D0.
2. Change from Baseline in the Mean Ultrafiltration Volume after 12 Months of Treatment with Dulaglutide.
[Time Frame: baseline, 6 months and 12 months]
Ultrafiltration volume from Baseline and after 6 and 12 months with Dulaglutide treatment assessment by the Peritoneal Equilibrium Test. The modified peritoneal equilibration test (PET) characterizes the peritoneal transport of fluid, creatinine and urea using a 4.5% dextrose peritoneal fluid.
3. Change from Baseline in the Mean 4 Hour Peritoneal Fluid to Plasma Creatinine (D/P) after 12 Months of Treatment with Dulaglutide.
[Time Frame: baseline, 6 months and 12 months]
The peritoneal equilibration test (PET) characterizes the peritoneal transport of fluid, creatinine and urea using a 4.5% dextrose peritoneal fluid. The concentration of creatinine in the dialysis fluid (D) at 4 hours is divided by the plasma creatinine (P), generating the D/P creatinine.
4. Change from Baseline in the Mean 4 Hour Peritoneal Fluid to Plasma BUN (D/P) after 12 Months of Treatment with Dulaglutide.
[Time Frame: baseline, 6 months and 12 months]
The peritoneal equilibration test (PET) characterizes the peritoneal transport of fluid, creatinine and urea using a 4.5% dextrose peritoneal fluid. The concentration of creatinine in the dialysis fluid (D) at 4 hours is divided by the plasma BUN (P), generating the D/P BUN.
5. According to D/P creatinine, peritoneal transport status was categorized as low (L), low average (LA), high average (HA) and high (H) (L<0.5, LA 0.5–0.64, HA 0.65–0.80, H≥0.81).

Secondary outcome measures
[Time frame: baseline (pre-treatment), and 12 months (post-treatment)].
1. Incidence rate of ultrafiltration failure measured using patient records
2. Incidence rate of peritoneal dialysis failure (i.e., peritoneal dialysis transfer to hemodialysis)
3. Incidence rate of peritonitis measured using patient records
4. Preservation of residual renal function in dialysis patients (i.e., 24-hour urinary urea and creatinine clearance and urine total protein to creatinine ratio)

Overall study start date
01/01/2021

Completion date
31/12/2026

Eligibility

Key inclusion criteria
1. CKD with a clinical cause of diabetes mellitus
2. Age is ≥ 20 and≤ 75 years
3. The subject had been receiving peritoneal dialysis for more than 3 months.
4. The subject treat with or without OHAs or insulin treatment
5. The subject doesn’t treated with GLP-1 analogue
6. The subject is able and willing to return for required follow-up visits and examinations.

Participant type(s)
Patient

Age group
Adult

Lower age limit
20 Years

Upper age limit
75 Years

Sex
Both

Target number of participants
75 (an estimated incomplete follow-up rate of 25%)

Key exclusion criteria
1. Female participants who are pregnant or breastfeeding
2. Participants who have any of the following medical conditions:
2.1. Chronic inflammatory or autoimmune diseases
2.2. Viral Hepatitis B or C liver infection, liver cirrhosis, or significant liver disease
2.3. CKD from causes other than diabetes
2.4. Cancer (malignancy)
2.5. Febrile illnesses
2.6. Age is < 20 or >75 years
2.7. The subject has a life expectancy of less than one years.
2.8. The subject has allergic reaction to any GLP-1 analogues.
2.9. HIV infection- the virus that causes AIDS
2.10. The subject is deemed by study physicians to be unsuitable for enrollment.
2.11. The subject is currently enrolled in another investigational study or registry that would directly/indirectly interfere with the current study.
2.12. The subject is unable or unwilling to return for required follow-up and examination.

Date of first enrolment
01/01/2022

Date of final enrolment
31/12/2025

Locations

Countries of recruitment
Taiwan

Study participating centre
Kaohsiung Chang Gung Memorial Hospital
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Sponsor information

Organisation
Chang Gung Memorial Hospital

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Sponsor type
Hospital/treatment centre

Website
https://www.cgmh.org.tw

ROR
https://ror.org/02verss31

Funder(s)

Funder type

Hospital/treatment centre

Funder Name
Kaohsiung Chang Gung Memorial Hospital

Alternative Name(s)
Kaohsiung CGMH

Funding Body Type
Private sector organisation

Funding Body Subtype
Other non-profit organizations

Location
Taiwan

Funder Name
National Science and Technology Council

Alternative Name(s)
National Science and Technology Council of Zambia, NSTC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Zambia

Results and Publications

Publication and dissemination plan
Planned publication in a high-impact peer-reviewed journal

Intention to publish date
31/12/2026

Individual participant data (IPD) sharing plan
The data-sharing plans for the current study are unknown and will be made available at a later date.

IPD sharing plan summary

Data sharing statement to be made available at a later date