ISRCTN56087634 https://doi.org/10.1186/ISRCTN56087634

High powered ultrasound to treat pancreas cancer

Submission date	Recruitment status	[ ] Prospectively registered
15/05/2020	No longer recruiting	[ ] Protocol
Registration date	**Overall study status**	[ ] Statistical analysis plan
22/07/2021	Completed	[ ] Results
Last Edited	**Condition category**	[ ] Individual participant data
10/05/2022	Cancer	[ ] Record updated in last year

Plain English summary of protocol

Background and study aims

High Intensity Focused Ultrasound (HIFU) uses a beam of high-energy ultrasound waves to kill cells by causing water inside the cells to heat up. This effect could be used to kill cells in a tumour. Ultrasound waves can be delivered to a specific point in the body, for example a tumour, under the surface of the skin. Doctors can control where to concentrate the ultrasound waves by using a device that can be used to visualise the inner body parts including the tumour during treatment. The device used to visualise the inner body parts is similar to the ultrasound devices used to look at unborn babies in pregnant women.

The aim of this study is to assess if High Intensity Focused ultrasound (HIFU) is safe and feasible in treatment of pancreatic cancers. The researchers also want to find out if this treatment has any beneficial effect in improving survival, reducing pain and improving quality of life in patients with pancreatic cancer. They would also like to assess any effects that the treatment has on symptoms experienced from the cancer. In addition, blood samples will be examined after the treatment to see if the immune system (which may play a role in preventing the growth of tumours) is affected by the treatment.

Who can participate?

Patients aged 18 years or older with pancreatic cancer

What does the study involve?

The study will test the ability of high powered ultrasound (HIFU) to treat pancreatic cancer. This will be assessed by performing MRI and CT scans before and after treatment. The treatment requires a general anaesthetic and a short hospital stay. It does not prevent patients from subsequently receiving chemotherapy. The researchers will also analyse blood samples to determine if the treatment causes an immune response against tumours.

What are the possible benefits and risks of participating?

The potential complications of the treatment itself are described below. In addition to the treatment

itself, the other medical interventions are: repeated blood tests, an MRI scan and an additional CT scan. These carry some risks. Taking blood samples for blood tests can cause pain, bruising and rarely infection. MRI and CT scans carry some small risks. These include heating of

metal objects about the person, which can cause burns. The contrast agent used as part of the scan can cause an allergic reaction (anaphylaxis) in sensitive individuals. Participants will have CT examinations of their chest, abdomen and pelvis, some of which will be extra to those that they would have if they did not take part. These procedures use ionising radiation to form images of the body. Ionising radiation can cause cell damage that may, after many years or decades, turn cancerous. The chance of this happening to participants is extremely small. The additional dose of radiation exposure by taking part in the study is equivalent to 8 years of background radiation. The aim of the treatment is to potentially destroy the cancer but HIFU has not yet been shown to reliably destroy pancreatic cancer and increase life expectancy. HIFU has been shown to reduce pain related to pancreatic cancer. The researchers are unable to give any guarantee as to whether the treatment will benefit you personally. The benefit of the trial is to society: the researchers hope to find out whether HIFU is safe and feasible in patients with pancreatic cancers. This study is also expected to give preliminary information regards effectiveness. This will help doctors in the future to make informed treatment decisions for patients. Further larger studies will be required to reliably assess whether HIFU treatment will benefit patients with pancreatic cancers.

Where is the study run from?
Churchill Hospital (UK)

When is the study starting and how long is it expected to run for?
February 2017 to June 2022

Who is funding the study?
Pancreatic Cancer Research Fund (UK)

Who is the main contact?
Katherine Gordon-Quayle (public), katherine.gordon-quayle@nds.ox.ac.uk
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Contact information

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Public

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Additional identifiers

Integrated Research Application System (IRAS)
240471

Protocol serial number
Version 4 (11.01.19)

Study information

Scientific Title
A multicentre phase II study to investigate the feasibility and safety of high intensity focused ultrasound in the treatment of pancreatic cancer

Study objectives
High Intensity Focused Ultrasound (HIFU) is a safe intervention for patients with locally advanced pancreatic cancer

Ethics approval required
Old ethics approval format

Ethics approval(s)
Approved 17/06/2019, South Central - Oxford A Research Ethics Committee (Level 3, Block B, Whitefriars, Lewins Mead, Bristol, BS1 2NT, UK; +44 (0)207 1048 045; oxforda.rec@hra.nhs.uk), REC ref: 19/SC/0095

Primary study design
Interventional

Study design
Multicentre interventional non-randomized study

Study type(s)
Treatment

Health condition(s) or problem(s) studied
Locally advanced pancreatic cancer

Interventions
Patients with confirmed pancreatic cancer (with or without spread to other organs) who cannot be treated with surgery can participate in the trial. Participants will undergo an MRI scan to determine if the tumour can be treated using ultrasound. Blood tests will also be taken and stored securely. If this is possible, patients will be treated under general anaesthetic using a high powered ultrasound scan. This treatment passes through the skins and tissues and does not need any skin incisions. Patients usually stay in hospital for a few days (typically 3) to recover. Another MRI scan is performed 2 weeks after treatment to determine treatment response. Blood tests will again be taken and stored at this point. Finally, after 3 months a CT scan is performed. Blood samples from before and after treatment will be analysed to determine if there has been an immune reaction to the tumour.

Intervention Type
Device

Phase
Phase II

Drug/device/biological/vaccine name(s)
JC200 (Chongqing Haifu (HIFU) Technology Co., Ltd)

Primary outcome(s)
Safety of HIFU therapy for pancreatic cancer measured using 30-day survival & adverse events and serious adverse events recorded using Clavien-Dindo grading

Key secondary outcome(s)
Feasibility of HIFU therapy :
1. Number of eligible patients agreeing to participate & proportion of enrolled participants completing treatment and follow up
2. Patient survival at 30 days, 3, 6 and 12 months
3. Treatment effect of HIFU on pancreatic cancer assessed using radiological evidence of tumour ablation on MRI at 30 days
4. Progression-free patient survival Imaging at 3, 6 and 12 months post-treatment or as indicated clinically
5. Immunological effects of HIFU treatment by regular measurement of leukocyte subsets at baseline, 14 days, 30 days and 3 months
6. Systemic response to HIFU treatment by regular measurement of CA 19-9 at baseline, 30 days, 3, 6 and 12 months
7. Patient experience of HIFU treatment using a questionnaire recording different aspects of patient experience during HIFU treatment admission at 2 weeks and 3 months following treatment
8. Patient-reported quality of life following HIFU treatment: ED-5D, EORTC QLQ-C30 and EORTC QLQ-PAN26 will be recorded at baseline, 72 hours, 30 days, 3, 6 and 12 months
9. Pain scores using Brief pain inventory at Baseline, 72 hours, 14 & 30 days, 3, 6 and 12 months

Completion date
01/06/2022

Eligibility

Key inclusion criteria

1. Histologically or cytologically confirmed adenocarcinoma
2. Locally advanced inoperable pancreatic ductal adenocarcinoma and or operable pancreatic ductal cancers but patients not fit for surgery
3. A measurable primary tumour on ultrasound imaging, with a target area of less than 8 cm in diameter on CT/MRI
4. A clear 1 cm margin between the tumour and associated organs (duodenum, stomach, transverse colon) on contrast-enhanced MR imaging
5. Biliary obstruction to be relieved before inclusion in the study
6. Age greater than or equal to 18 years
7. Fit for general anaesthesia
8. Performance status: ECOG ≤2
9. An American Society of Anaesthesiologists (ASA) grade of ≤3
10. Life expectancy: At least 12 weeks
11. Able to attend for long-term follow-up
12. No concurrent malignancy
13. No serious medical or psychological condition
14. Ability to give fully informed consent

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Adult

Lower age limit
18 Years

Sex
All

Key exclusion criteria
1. Patients with TNM Stage IV (metastatic disease)
2. Unclear cancer margins on ultrasound imaging
3. Invasion into the duodenal wall
4. Stricture of superior mesenteric artery directly by tumour encasement, or invasion of SMV below transverse mesocolon
5. Patient suitable for surgical resection
6. Refusal to give informed consent
7. Unable to give informed consent
8. Not fit for HIFU treatment: any significant disease, disorder, or finding which, in the opinion of the investigator, may significantly increase the risk to the patient because of participation in the study
9. Active or ongoing infection requiring IV antibiotics
10. Known pregnancy

Date of first enrolment
01/11/2019

Date of final enrolment
01/11/2021

Locations

Countries of recruitment
United Kingdom

England

Study participating centre
Churchill Hospital
Old Road
Headington
Oxford
United Kingdom
OX3 7LE

Sponsor information

Organisation
University of Oxford

ROR
https://ror.org/052gg0110

Funder(s)

Funder type
Charity

Funder Name
Pancreatic Cancer Research Fund

Alternative Name(s)
PancreaticCancer Res, PCRF

Funding Body Type
Government organisation

Funding Body Subtype
Trusts, charities, foundations (both public and private)

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan
The datasets generated and/or analysed during the current study during this study will be included in the subsequent results publication. The datasets pertaining to morbidity and mortality will be made available upon request. Patient-level data will not be released.

IPD sharing plan summary
Other

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
HRA research summary			28/06/2023	No	No