Pituitary Gland Stimulation for pain relief

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To establish if targeted pituitary stimulation results in pain relief in cancer patients with opioid refractive pain or intolerance to opioids and patients with severe central neuropathic pain.

Ethical review	Approved WMO
Status	Recruitment stopped
Health condition type	Other condition
Study type	Interventional

Summary

ID

NL-OMON52130

Source
ToetsingOnline

Brief title
PGS for pain relief

Condition

- Other condition
- Miscellaneous and site unspecified neoplasms malignant and unspecified
- Central nervous system infections and inflammations

Synonym
intractable pain, severe pain

Health condition

Oncogene pijn, centrale neuropathische pijn

Research involving
Human

Sponsors and support

Primary sponsor: Leids Universitair Medisch Centrum
Source(s) of monetary or material Support: Health-Holland TKI,Ripple LLC

Intervention

Keyword: Analgesia, Cancer-pain, Deep Brain Stimulation, Pituitary

Outcome measures

Primary outcome

Pain, defined as continuous or background pain, measured via a Numeric Rating

Scale and on the Brief Pain Inventory, corrected for medication use

Patient satisfaction with treatment

Treatment safety in terms of side effects

Secondary outcome

Use of analgetic medication

Hormone levels

Patient-reported outcome measures: pain interference, social role functioning,

cognitive functioning

Study description

Background summary

Pain relief in palliative cancer patients and central neuropathic pain patients is mainly achieved via opioid administration, or other centrally acting medication. However, some patients have medication refractive pain or are intolerant to (high doses of) opioids. For these patients limited alternative treatments are available. In the 1980*s, before the mass use of opioids, hypophysectomy was used to treat these patients. Hypophysectomy had a strong analgesic effects, but also severe side effects through pituitary hormone depletion. Yanagida et al. showed that a single pituitary electrical stimulation resulted in similar analgesic effects for 10 hours to 1 week with

limited side effects in 20 of 25 cancer patients. However, they only described 3 patients with an implanted electrode with ongoing stimulation treatment, all of which experienced lasting satisfactory analgesia with no to limited side effects.
In recent times, animal studies have shown an oxytocin-induced analgesic effects in pituitary or hypothalamic stimulation. We hypothesize that through pituitary stimulation oxytocin-induced analgesia can be established in pain patients.

Study objective

To establish if targeted pituitary stimulation results in pain relief in cancer patients with opioid refractive pain or intolerance to opioids and patients with severe central neuropathic pain.

Study design

Open label, single arm, proof-of-concept feasibility study

Intervention

Patients will undergo an implantation of an extradural pituitary surface electrode in the posterior pituitary fossa. The electrode will be attached to a neurostimulator via which the patient can give himself up to 8 stimulations per day.

Study burden and risks

Patients will undergo a surgical procedure to implant the electrode in the extradural space of the sellar fossa. Thereafter, they will be asked to keep a pain diary with pain scores on a numeric rating scale. They will asked to fill in a questionnaire before the implantation and weekly during stimulation treatment. There is a risk of complications of the surgery and side effects of the stimulation. The surgery will be performed by experienced pituitary neurosurgeons to limit the risk of complications. To limit potential side effects, a targeted stimulation setting will be used and the pulse amplitude will be titrated down to the lowest effective dose.
If our hypothesis is correct, this study has a strong beneficial effect for the participants as pain relief will be established. This study will be performed in patients with medication refractive pain or who are intolerant to opioids to analyse the effect of treatment in the patient group at which it is targeted and to not expose patients to risk and burden for whom a satisfactory treatment is readily available.

Contacts

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Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adults (18-64 years)
Elderly (65 years and older)

Inclusion criteria

two patient categories are studied, with each their own set of inclusion criteria

set one:
- Adult patient
- In palliative phase of metastatic disease
- Inadequately controlled pain with standard care
- Karnofsky Performance Score >=50

set two:
- Adult patient
- Diagnosed with central neuropathic pain

- Inadequately controlled pain with standard care

Exclusion criteria

• Not fit for general anesthesia
• Pregnancy
• Unfavorable local anatomy for PGS, due to a disease process, or anatomical configuration
• Clinical signs of posterior pituitary gland disfunction
• Recent history of alcohol or drug abuse
• Immunodeficiency
• Need for anticoagulation therapy that cannot be abrogated for surgery
• Cognitive impairments prohibiting full understanding of study and ability to provide informed consent
• Not able to adequately communicate in Dutch or English

Study design

Design

Study type: Interventional

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Treatment

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	12-10-2021
Enrollment:	10
Type:	Actual

Medical products/devices used

Generic name:	Pituitary gland stimulator
Registration:	No

Ethics review

Approved WMO Date:	30-08-2021
Application type:	First submission
Review commission:	METC Leiden-Den Haag-Delft (Leiden) metc-ldd@lumc.nl

Approved WMO Date:	10-11-2021
Application type:	Amendment
Review commission:	METC Leiden-Den Haag-Delft (Leiden) metc-ldd@lumc.nl

Approved WMO Date:	12-04-2022
Application type:	Amendment
Review commission:	METC Leiden-Den Haag-Delft (Leiden) metc-ldd@lumc.nl

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

No registrations found.

In other registers

Register	ID
CCMO	NL76711.058.21