Detection of circulating tumour cells in cerebrospinal fluid (CSFCTs) to diagnose leptomeningeal metastases (LM) among breast cancer patients

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Ethical review	Approved WMO
Status	Completed
Health condition type	Breast neoplasms malignant and unspecified (incl nipple)
Study type	Observational invasive

Summary

ID

NL-OMON50559

Source
ToetsingOnline

Brief title
CTCs in liquor

Condition

- Breast neoplasms malignant and unspecified (incl nipple)
- Spinal cord and nerve root disorders

Synonym
metastases in central nervous system of breast cancer

Research involving
Human

Sponsors and support

Primary sponsor: Erasmus MC, Universitair Medisch Centrum Rotterdam
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: breastcancer, CTC, leptomenigeal, metastases

Outcome measures

Primary outcome

To compare the detection rate of LM by identifying and quantifying CSFCTs

using the CellSearch technique with the standard of care using CSF cytology

analyses by a pathologist among breast cancer patients with clinical suspicion

of LM.

Secondary outcome

Her2 and ER expression on CTCs in peripheral blood and of the (archived)

primary breast tumor

Molecular profile of CSFCTs, CTCs in peripheral blood and of the (archived)

primary breast tumor

Study description

Background summary

Patients with leptomeningeal metastases (LM) have a severely compromised quality of life (QoL) due to paralysis of cranial and spinal nerves, while treatment modalities are limited. As a consequence, prognosis is poor with a median overall survival of only 2.2 - 4.4 months (1).
This inferior outcome is partially explained by a pronounced delay in diagnosing LM as currently available diagnostic techniques are hampered by a low sensitivity. Therefore, there is an unmet need for novel diagnostic tests

to increase sensitivity to detect LM

Study objective

In this pilot, we aim to improve the detection rate of LM by using the CellSearch technique quantifying circulating tumor cells (CTCs) in cerebrospinal fluid (CSF, i.e. CSFCTs) and compare this with the current standard of care; namely cytological examination of CSF by the pathologist in breast cancer patients with clinical suspicion of LM. We hypothesize that the detection rate of the CellSearch technique is higher compared to cytology.

Study design

In patients with breast cancer suspected of LM in whom the MRI result is non-conclusive, who have no contra-indications and gave informed consent, a LP will be performed for regular cytological analysis. Additional liquor (minimal amount of 4 ml) will be sent to the laboratory to detect and quantify CSFCTs by the CellSearch technique.

In addition, peripheral blood samples (3x10 ml) will be collected for detect, quantify and molecular characterize CTCs in blood. Any remnant liquor will be stored at -80ºC to perform proteomic analysis by mass spectrometry and molecular analysis of circulating tumor DNA at a later stage.

From all patients clinical data, and outcome will be collected prospectively up to a max. of 12 months.

Study burden and risks

The burden for patients is limited as there will be no additional invasive investigations. First of all, only patients who are planned to undergo a lumbar puncture (LP) for regular care will be asked to participate. Importantly, the collection of additional liquor during the planned LP will be of no harm for the patients. Blood sampling for CTC detection in the peripheral circulation is of very limited harm.

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

Study population:
- Breast cancer patients with clinical suspicion of LM who are planned to undergo a LP to confirm/exclude the diagnosis LM
- Signed informed consent, Control Group:
- Patients with a hematologic malignancy, who are planned to undergo a LP for CSF analysis to confirm or to exclude the diagnosis LM, will be included as negative controls.
- Signed informed consent.

Exclusion criteria

Study Population:
- Contra-indication for LP (on the discretion of the treating neurologist),
Control Group:
- Contra-indication for LP (on the discretion of the treating neurologist)
- A medical history of a solid malignancy.

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)

Primary purpose: Diagnostic

Recruitment

NL

Recruitment status:	Completed
Start date (anticipated):	20-01-2016
Enrollment:	96
Type:	Actual

Ethics review

Approved WMO Date:	09-11-2015
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	29-09-2016
Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	08-02-2018
Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)
Approved WMO Date:	04-05-2020

Application type:	Amendment
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

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	NL53555.078.15