Repeatability of 68-GaNOTA-Anti-HER2 VHH1 PET/CT in Breast Carcinoma Patients

**CLINICALTRIALS.GOV IDENTIFIER**
NCT03924466

**RECRUITMENT STATUS**
RECRUITING

**FIRST POSTED**
APRIL 23, 2019

**LAST UPDATE POSTED**
DECEMBER 20, 2021

**STUDY DESCRIPTION**

**Brief Summary**
Study objective: Cohort 1: To quantify the uptake of 68GaNOTA-Anti-HER2 VHH1 in local or distant metastases from breast carcinoma patients and to assess repeatability of the image-based HER2 quantification. The uptake will be correlated to results obtained via biopsy of the same lesion, if available. Cohort 2: To report on uptake of 68GaNOTA-Anti-HER2 VHH1 in different cancer types that might overexpress HER2 Cohort 3: To explore the feasibility and added value of 68GaNOTA-Anti-HER2 VHH1 in the neoadjuvant setting of HER2-expressing breast carcinoma Time schedule: After inclusion, patients will be injected intravenously with 37 - 185 MBq 68GaNOTA-Anti-HER2 VHH1 with a total mass of up to 200 μg NOTA-Anti-HER2 VHH1. Serum and plasma samples will be collected at injection. At 90 min after injection, a total body PET/CT scan will be performed. Patients in cohort 1 will undergo a second PET/CT procedure, identical to the first procedure, within 8 days, with a minimal interval of 18h and maximal interval of 8 days. Patients in cohort 2 can undergo an optional 18F-FDG-PET/CT within 21 days prior to or after 68GaNOTA-Anti-HER2 VHH1. In cohort 1 and 2, based on PET/CT images, up to 2 lesions will be selected for optional image-guided biopsy. Biopsy will be performed max. 28 days after the last PET/CT. Plasma and serum samples will be obtained between 60 and 365 days after first injection for patients in cohort 1 and between 42 and 365 days after first injection for patients in cohort 2. Patients in cohort 3 will undergo 68GaNOTA-Anti-HER2 VHH1 PET/CT prior to the start of neoadjuvant treatment and again after the last cycle of neoadjuvant treatment but prior to surgery. Plasma and serum samples will be obtained before each injection and between 42 and 365 days after the last injection.

**Condition or Disease:**
- Metastatic Breast Carcinoma
- Locally Advanced Breast Cancer
- Cancer of Pancreas
- Solid Tumor With Intermediate or High HER2 Expression
- Salivary Gland Cancer
- Gastric Cancer
- Endometrial Cancer
- Uterine Cancer
- Non Small Cell Lung Cancer
- Biliary Tract Cancer
- Cholangiocarcinoma
- Colorectal Cancer
- Urothelial Carcinoma
- Prostate Cancer

**Intervention/treatment:** Drug: 68GaNOTA-Anti-HER2 VHH1

**Phase:** Phase 2

**DETAILED DESCRIPTION**
N/A

**STUDY DESIGN**

**Study Type:** Interventional

**Estimated Enrollment:** 55 participants

**Intervention Model:** Single Group Assignment

**Masking:** None (Open Label) ()

**Primary Purpose:** Diagnostic

**Official Title:** Repeatability of 68-GaNOTA-Anti-HER2 VHH1 PET/CT in Breast Carcinoma Patients

**ARMS AND INTERVENTIONS**

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| Experimental: Cancer patients  
Cohort 1: locally advanced or metastatic breast carcinoma patients  
Cohort 2: Patients with locally advanced, unresectable, or metastatic cancer disease of breast with low, intermediate or high HER2-expression, salivary gland; gastric body or gastro-oesophageal junction; endometrium; uterus; lung; biliary tract; gallbladder; pancreas; colorectum; urothelium; prostate; other solid with intermediate or high HER2-expression  
Cohort 3: Patients with local or locally advanced HER2+ breast carcinoma, who are planned for neo-adjuvant treatment prior to surgery, and who are suspected for axillary lymph node invasion. | Drug: 68GaNOTA-Anti-HER2 VHH1  
All subjects will receive at least one single intravenous injection of the IMP followed by a total body PET/CT prior to receiving standard-of-care therapy. A second injection of the IMP can be administered before or during standard-of-care treatment, depending on cohort. |

**OUTCOME MEASURES**
Primary Outcome Measures:

1. Repeatability of lesional PET/CT characteristics [Time Frame: 90 min post injection]
   - The lesional tracer uptake in local and distant metastases of at least 12 mm (for lymph nodes short axis) will be measured on both PET/CT's (expressed as standard uptake value [SUV]) and repeatability will be calculated.
   - The lesional tracer uptake in different cancer types of at least 10 mm maximal diameter (for lymph nodes short axis) will be measured on PET/CT (expressed as standard uptake value [SUV]).

2. Feasibility and added value of 68GaNOTA-Anti-HER2 in neoadjuvant setting of breast carcinoma [Time Frame: time of surgery following neo-adjuvant treatment (typically within 14 days following the second intervention)]
   - Within-patient tumor heterogeneity for HER2 expression, observed on 68GaNOTA-Anti-HER2 PET/CT or biopsy analyses

3. Immunogenicity [Time Frame: prior to and between 60 and 365 days after the first injection]
   - Immunogenicity assessed on plasma samples obtained prior to injection of the IMP and obtained between 60 and 365 days after the (first) injection

4. Influence image-guide biopsy on patient management [Time Frame: Within 3 months following the last intervention]
   - To determine in which relative number of patients, the patient management was altered after 68GaNOTA-Anti-HER2 VHH1 PET/CT and the subsequent optional biopsy

Secondary Outcome Measures:

- Measures:
  - No

ELIGIBILITY CRITERIA

Ages Eligible for Study: 18 Years and older (Adult, Older Adult)

Sexes Eligible for Study: All

Accepts Healthy Volunteers: No

Volunteers:

Criteria

COHORT SPECIFIC INCLUSION CRITERIA:

COHORT 1:
- Patients will only be included in the study if they meet all of the following criteria:
  - Patient who has given informed consent
  - Patient with age 18 years or older
  - Patient with locally or distantly advanced breast carcinoma, with at least 1 lesion of at least 12 mm maximal diameter. For lymph node metastases, the largest diameter should be at least 15 mm and the short axis at least 12 mm.

COHORT 2:
- Patients will only be included in the study if they meet all of the following criteria:
  - Patient who has given informed consent
  - Patient with age 18 years or older
  - Patient with locally advanced, unselectable, or metastatic cancer disease, with at least 1 lesion of at least 10 mm maximal diameter (for lymph node metastases, short axis at least 10 mm) of any of the following types:
    - Breast carcinoma with low, intermediate or high HER2-expression, based on IHC 1+ or IHC 2+ or IHC 3+, as determined by local assessment on any of the available cancer tissues (salivary gland cancer adenocarcinoma of the gastric body or gastro-esophageal junction endometrial cancer cancer of cervix uteri non-small cell lung cancer biliary tract cancer including intra- or extrahepatic cholangiocarcinoma and tumors arising in the ampulla of Vater or gallbladder pancreatic cancer colorectal cancer urothelial carcinoma, including transitional cell or predominantly transitional cell carcinoma of the renal pelvis, ureter, urinary bladder or urethra prostate cancer Other solid malignant tumors with intermediate or high HER2-expression, based on IHC 2+ or IHC 3+, as determined by local assessment on any of the available cancer tissues
  - Patients who have progressed following at least one prior systemic treatment for metastatic or advanced disease, or who have no satisfactory alternative treatment option, according to the treating physician (based on all available data such as medical imaging, lab results, clinical examination, …), and who are considered for a next line of systemic treatment. Patients who already participated in the trial and who are diagnosed with progressive or recurrent disease can be re-included if all inclusion criteria and none of the exclusion criteria apply.

COHORT 3:
- Patients will only be included in the study if they meet all of the following criteria:
  - Patient who has given informed consent
  - Patient with age 18 years or older
  - Patient with locally advanced, unselectable, or metastatic cancer disease, with at least 1 lesion of at least 10 mm maximal diameter (for lymph node metastases, short axis at least 10 mm) of any of the following types:
    - Breast carcinoma with low, intermediate or high HER2-expression, based on IHC 1+ or IHC 2+ or IHC 3+, as determined by local assessment, ultrasound, CT or MRI, or who has a confirmed lymph node invasion
    - Patients who either had 18F-FDG PET/CT in the last 4 weeks before inclusion, or positive) breast carcinoma, who is planned for neo-adjuvant treatment prior to surgery, and who is suspected for axillary lymph node invasion, based on all available data such as medical imaging, lab results, clinical examination, …), and who are considered for a next line of systemic treatment. Patients who already participated in the trial and who are diagnosed with progressive or recurrent disease can be re-included if all inclusion criteria and none of the exclusion criteria apply.

GENERAL EXCLUSION CRITERIA:
- Patients who will not be included in the study if one or more of the following criteria applies:
  - Patient with locally advanced, unselectable, or metastatic cancer disease, with at least 1 lesion of at least 10 mm maximal diameter (for lymph node metastases, short axis at least 10 mm) of any of the following types:
    - Breast carcinoma with low, intermediate or high HER2-expression, based on IHC 1+ or IHC 2+ or IHC 3+, as determined by local assessment, ultrasound, CT or MRI, or who has a confirmed lymph node invasion
    - Patients who either had 18F-FDG- PET/CT in the last 4 weeks before inclusion, or positive) breast carcinoma, who is planned for neo-adjuvant treatment prior to surgery, and who is suspected for axillary lymph node invasion, based on all available data such as medical imaging, lab results, clinical examination, …), and who are considered for a next line of systemic treatment. Patients who already participated in the trial and who are diagnosed with progressive or recurrent disease can be re-included if all inclusion criteria and none of the exclusion criteria apply.

CONTACTS AND LOCATIONS

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Locations
- Belgium, Brussel: Uz Brussel Brussels

Sponsors and Collaborators
- Universitair Ziekenhuis Brussel
- Kom Op Tegen Kanker

Agentschap voor Innovatie door Wetenschap en Technologie, Project Toegepast Biomedisch onderzoek met een primair Maatschappelijke finaliteit.

Investigator

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MORE INFORMATION

Responsible Party: Universitair Ziekenhuis Brussel

ClinicalTrials.gov Identifier: NCT03924466

Other Study ID Numbers: UZBRU_VHH1_3, 2016-002164-13

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Individual Participant Data (IPD) Sharing Statement:

Plan to Share IPD: No

Studies a U.S. FDA-regulated Drug Product: No

Studies a U.S. FDA-regulated Device Product: No

Keywords provided by Universitair Ziekenhuis Brussel:

HER2

Additional relevant MeSH terms:

Carcinoma
Endometrial Neoplasms
Cholangiocarcinoma
Breast Neoplasms
Biliary Tract Neoplasms
Salivary Gland Neoplasms
Uterine Neoplasms
Pancreatic Neoplasms
Neoplasms, Glandular and Epithelial
Neoplasms by Histologic Type
Neoplasms
Urogenital Neoplasms
Neoplasms by Site
Digestive System Neoplasms
Digestive System Diseases

Genital Neoplasms, Female
Uterine Diseases
Adenocarcinoma
Breast Diseases
Skin Diseases
Biliary Tract Diseases
Mouth Neoplasms
Head and Neck Neoplasms
Mouth Diseases
Stomatognathic Diseases
Salivary Gland Diseases
Endocrine Gland Neoplasms
Endocrine Diseases