

Peking university people's hospital

Visualization Study on Tumor Evolution Mechanisms and Key Molecular Functions in Neoadjuvant Immunotherapy for Lung Cancer

Cadherin 3(CDH3)-targeted PET in Lung Malignant Tumors

2026PHB033-001

2026-2-14

Informed Consent Form

Hello!

We are planning to conduct a study titled "Visualization Study on Tumor Evolution Mechanisms and Key Molecular Functions in Neoadjuvant Immunotherapy for Lung Cancer." Because you have a pulmonary nodule and your specific situation meets the inclusion criteria for this study, we would like to invite you to participate.

This Informed Consent Form will introduce you to the purpose, procedures, benefits, risks, inconveniences, and your rights regarding this study. Please read it carefully before making a decision about whether to participate. While the researcher explains and discusses the informed consent form with you, feel free to ask questions at any time and ask them to clarify anything you do not understand. You can discuss it with your family, friends, and your treating physician before deciding.

If you are currently participating in other clinical research, please be sure to inform your study doctor or research staff.

The principal investigator for this study is Professor Wang Jun from the Department of Thoracic Surgery, Peking University People's Hospital. The study is funded by the National Natural Science Foundation of China.

1. Why is this study being done?

Lung cancer is a leading cause of cancer-related death in China and globally, especially non-small cell lung cancer (NSCLC), and its diagnostic and treatment models are evolving rapidly. Traditional ^{18}F -FDG PET/CT, a commonly used preoperative imaging method, has issues such as a high false-positive rate. Currently, reliable non-invasive preoperative methods for differentiating benign from malignant pulmonary nodules are still lacking. PET molecular imaging is a key emerging tool for lung cancer diagnosis and treatment. By utilizing the targeting group of molecular probes to precisely target tumor cell biomarkers, coupled with the rays released by the radioactive decay of conjugated radionuclides, it is expected to achieve precise detection and non-invasive monitoring of lesions.

Cadherin-3 (CDH3) is a glycoprotein. Its aberrant high expression in non-small cell lung cancer is closely associated with poor prognosis, promotion of tumor proliferation and migration, and the formation of an immunosuppressive microenvironment. CDH3 has emerged as a promising diagnostic and therapeutic target for lung cancer. PET molecular imaging targeting CDH3 holds the potential to address the aforementioned issue of high false-positive rates and progressively achieve non-invasive differential diagnosis of benign and malignant pulmonary nodules. The CDH3-targeting molecular probe TOI-1, independently developed by the team at Peking University People's Hospital, has demonstrated tumor-specific uptake in preliminary studies and has been authorized by the Ethics Committee for exploratory clinical research. Undergoing ^{68}Ga -TOI-1

PET/CT imaging can help determine the benign or malignant nature and extent of the tumor, perform localization and qualitative diagnosis, and provide a scientific basis for disease staging, activity assessment, treatment, and prognosis.

2. Who will be invited to participate in this study?

This sub-study plans to enroll patients with pulmonary nodules highly suspected of being malignant according to clinical diagnostic standards.

3. How many people will participate in this study?

This sub-study plans to enroll a total of 50 patients with pulmonary nodules who have not received radiotherapy or chemotherapy, and for whom pathological diagnosis can be obtained through surgery or biopsy, or who are highly suspected of having malignant nodules according to clinical diagnostic standards.

4. How will the study be conducted?

If you meet the inclusion criteria and after the researcher obtains your informed consent, the doctor will fully explain the purpose and process of this study to you. Please ask the doctor if you have any questions. You can only agree to participate in this study when you are satisfied with all aspects of the study explained by the doctor. If you agree to participate, you may undergo ^{68}Ga -TOI-1 PET/CT scan and ^{18}F -FDG PET/CT scan before your surgery. On the day of the scan, you will receive an intravenous injection of the imaging agent, and the PET/CT scan will be performed 30-90 minutes later.

5. How long will the study last?

This study will conclude after the surgery and will not cause additional interference to the patient.

6. What are the risks of participating in this study?

1) During the injection of the imaging agent, a few individuals may experience temporary discomfort and/or bruising at the venipuncture site, which usually resolves on its own shortly; 2) Although the incidence is very low, you may experience mild drug allergies, such as local erythema, swelling, etc. These do not pose systemic risks, are self-limiting, and require no special treatment (the chemical amount of the single-dose imaging drug is extremely minute (tens of micrograms) and is not expected to cause an immune reaction); 3) PET/CT examination involves a certain amount of radiation exposure. The radiation dose per scan is roughly equivalent to that of one contrast-enhanced CT scan of the abdomen and pelvis. 4) All data will use a unique code instead of patient personal information, excluding identifiable information such as name, ID number, and contact information, ensuring privacy and security. In the process of paper publication and result presentation, only de-identified data will be used, and it will not contain any information traceable to the patient's personal identity.

7. What are the benefits of participating in this study?

- 1) Direct benefit: Participating in this study may provide reference information for your diagnosis and treatment from the perspective of tumor CDH3 expression, potentially enabling a more accurate assessment of your condition.
- 2) Indirect benefit: The information obtained from this study may benefit you and other patients with similar conditions in the future.

8. Is participation and completion of this study mandatory?

Your participation in this study is entirely voluntary. If you do not wish to participate, you may refuse, and this will not have any negative impact on your current or future medical care. Your doctor will provide you with standard diagnosis and treatment. Even if you agree to participate, this study will not change or adversely affect your routine diagnosis and treatment; instead, it may assist in your early diagnosis. You may change your mind at any time and inform the researcher of your decision to withdraw. Your withdrawal will not affect your access to normal medical services. During the study, if any information arises that might influence your decision to continue participating, we will inform you promptly. If you decide to discontinue participation, please notify your study physician promptly so they can provide advice and guidance regarding your health status.

During the study, you may be withdrawn if you have poor compliance, are unable to cooperate with the protocol, or if serious complications or other conditions make it inappropriate for you to continue. Additionally, regulatory authorities may terminate the study prematurely. If the study is terminated early, we will notify you promptly, and your study physician will provide advice and guidance based on your health status.

9. What are the costs of participating?

You will receive 1 ^{68}Ga -TOI-1 PET/CT scan and 1 ^{18}F -FDG PET/CT scan free of charge. There are no other additional costs.

10. Will participants receive compensation for taking part in this study?

Participants in this study will not receive additional compensation. If you have medical needs during the diagnosis and treatment period, you can contact the researchers promptly.

11. What happens if I suffer a research-related injury?

If a research-related physical injury occurs, standard procedures outlined in the Clinical Trial Risk Management and Disposal Plan of the Department of Thoracic Surgery and the Department of Nuclear Medicine will be followed to guide the participant towards active treatment. If you cannot tolerate the adverse drug reactions or fail to comply with the doctor's requirements, the doctor may recommend that you withdraw from this study. If a serious adverse event directly related to the study

drug or study procedures occurs, medical expenses will be reimbursed, and appropriate compensation will be provided in accordance with relevant laws and regulations.

12. Will my information be kept confidential?

If you decide to participate, your personal data from the study will be kept confidential. Without your permission, any information that could identify you will not be disclosed to anyone outside the research team. All research staff and related parties are required to keep your identity confidential according to regulations. Your records will be kept in a locked filing cabinet accessible only to researchers. If necessary, members of government regulatory authorities or the ethics committee may review your personal data at the research site as per regulations. When the results of this study are published, your identity will not be disclosed.

13. Who should I contact if I have questions or difficulties?

If you have any questions related to this study, please contact Dr. Li at: 18515358387.

If you have questions related to your rights or interests, please contact the Ethics Committee of Peking University People's Hospital at: 010-88324516.

Informed Consent Form (Signature Page)

Researcher's Statement

I have informed this participant about the background, purpose, procedures, risks, and benefits of the study "Visualization Study on Tumor Evolution Mechanisms and Key Molecular Functions in Neoadjuvant Immunotherapy for Lung Cancer." I have given them sufficient time to read the informed consent form, discuss it with others, and have answered their questions related to the study. I have informed the participant that they can contact the researcher at any time regarding study-related questions, and contact the Ethics Committee of Peking University People's Hospital regarding questions related to their rights/interests, providing accurate contact information. I have informed the participant that they can withdraw from this study without any reason. I have informed the participant that they will receive a copy of this signed informed consent form.

| Signature of Researcher Obtaining Consent (Printed Name) | Date |

| :--- | :--- |

| Signature of Researcher Obtaining Consent (Handwritten) | Date |

Participant's Statement

I have been informed about the background, purpose, procedures, risks, and benefits of the study "Visualization Study on Tumor Evolution Mechanisms and Key Molecular Functions in Neoadjuvant Immunotherapy for Lung Cancer." I have had adequate time and opportunity to ask questions, and I am satisfied with the answers. I have also been informed who to contact if I have

questions, want to report difficulties or concerns, have suggestions about the study, or wish to obtain further information or provide assistance. I have read this informed consent form and agree to participate in this study. I understand that I can withdraw from the study at any time during its course without giving any reason. I have been informed that I will receive a copy of this signed informed consent form.

| Signature of Researcher Obtaining Consent (Printed Name) | Date |

| :--- | :--- |

| Signature of Researcher Obtaining Consent (Handwritten) | Date |

| (Add or replace with the following if the participant lacks or has diminished capacity to give informed consent) | |

| Signature of Legal Representative (Printed Name) | Date |

| Signature of Legal Representative (Handwritten) | Date |

| Relationship to Participant | |

| Participant's Signature (if possible) | Date |

Peking university people's hospital

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Cadherin 3(CDH3)-targeted PET in Lung Malignant Tumors

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Informed Consent Form

Hello!

We are planning to conduct a study titled "Visualization Study on Tumor Evolution Mechanisms and Key Molecular Functions in Neoadjuvant Immunotherapy for Lung Cancer." Because you have been diagnosed with lung cancer and are scheduled to receive neoadjuvant immunotherapy for lung cancer according to standard clinical practice, and because your specific situation meets the inclusion criteria for this study, we would like to invite you to participate.

This Informed Consent Form will introduce you to the purpose, procedures, benefits, risks, inconveniences, and your rights regarding this study. Please read it carefully before making a decision about whether to participate. While the researcher explains and discusses the informed consent form with you, feel free to ask questions at any time and ask them to clarify anything you do not understand. You can discuss it with your family, friends, and your treating physician before deciding.

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The principal investigator for this study is Professor Wang Jun from the Department of Thoracic Surgery, Peking University People's Hospital. The study is funded by the National Natural Science Foundation of China.

1. Why is this study being done?

Lung cancer is a leading cause of cancer-related death in China and globally, especially non-small cell lung cancer (NSCLC), and its treatment models are evolving rapidly. Immunotherapy and targeted neoadjuvant therapy can clear micrometastases to reduce postoperative recurrence, downgrade the tumor stage to improve the resectability of the primary lesion, and improve the long-term survival rate of lung cancer patients to a certain extent.

Molecular imaging is a novel tool for precision diagnosis of lung cancer. By utilizing the targeting group of molecular probes to precisely target tumor cell biomarkers, coupled with the rays released by the radioactive decay of conjugated radionuclides, it is expected to achieve precise detection and non-invasive monitoring of lesions, addressing key and difficult challenges in traditional PET imaging during comprehensive lung cancer treatment, such as the persistently high false-positive rate.

Cadherin-3 (CDH3) is a glycoprotein. Its aberrant high expression in non-small cell lung cancer is closely associated with poor prognosis, promotion of tumor proliferation and migration, and the formation of an immunosuppressive microenvironment. CDH3 has emerged as a promising new therapeutic target for lung cancer. The CDH3-targeting molecular probe ^{68}Ga -TOI-1 was developed by Peking University People's Hospital, which holds the independent intellectual

property rights. It has been authorized by the Ethics Committee of Peking University People's Hospital for exploratory clinical research. Undergoing ^{68}Ga -TOI-1 PET/CT imaging can help determine the benign or malignant nature and extent of the tumor, perform localization and qualitative diagnosis, and enable early diagnosis and restaging of recurrent tumors, providing a scientific basis for disease staging, activity assessment, treatment, and prognosis.

2. Who will be invited to participate in this study?

1) Aged 18 years or older, male or female, with an ECOG performance status of 0 or 1; 2) Possessing complete clinical and imaging data; 3) Expected survival ≥ 12 weeks; 4) Blood routine and liver/kidney function meeting the following criteria: Blood routine: $\text{WBC} \geq 4.0 \times 10^9/\text{L}$ or neutrophils $\geq 1.5 \times 10^9/\text{L}$, $\text{PLT} \geq 100 \times 10^9/\text{L}$, $\text{Hb} \geq 90 \text{ g/L}$; PT or $\text{APTT} \leq 1.5 \times \text{ULN}$; Liver/kidney function: $\text{T-Bil} \leq 1.5 \times \text{ULN}$, $\text{ALT/AST} \leq 2.5 \times \text{ULN}$, $\text{ALP} \leq 2.5 \times \text{ULN}$; $\text{BUN} \leq 1.5 \times \text{ULN}$, $\text{SCr} \leq 1.5 \times \text{ULN}$; 5) Diagnosis of lung cancer by biopsy pathology before neoadjuvant therapy, with expected survival ≥ 12 weeks; 6) Ability to provide sufficient tumor tissue for testing research.

3. How many people will participate in this study?

This sub-study plans to enroll a total of 30 lung cancer patients diagnosed by biopsy pathology before neoadjuvant therapy and requiring neoadjuvant therapy based on their stage.

4. How will the study be conducted?

If you meet the inclusion criteria and after the researcher obtains your informed consent, the doctor will fully explain the purpose and process of this study to you. Please ask the doctor if you have any questions. You can only agree to participate in this study when you are satisfied with all aspects of the study explained by the doctor. If you agree to participate, you will undergo a total of 2 ^{68}Ga -TOI-1 PET/CT scans and 2 ^{18}F -FDG PET/CT scans, once before neoadjuvant therapy and once before surgery. On the day of the scan, you will receive an intravenous injection of the imaging agent, and the PET/CT scan will be performed 30-90 minutes later.

5. How long will the study last?

This study will involve long-term follow-up for approximately 2 years and will not cause additional interference to the patient.

6. What are the risks of participating in this study?

1) During the injection of the imaging agent, a few individuals may experience temporary discomfort and/or bruising at the venipuncture site, which usually resolves on its own shortly; 2) Although the incidence is very low, you may experience mild drug allergies, such as local erythema, swelling, etc. These do not pose systemic risks, are self-limiting, and require no special treatment (the chemical amount of the single-dose imaging drug is extremely minute (tens of micrograms)

and is not expected to cause an immune reaction); 3) PET/CT examination involves a certain amount of radiation exposure. The radiation dose per scan is roughly equivalent to that of one contrast-enhanced CT scan of the abdomen and pelvis. 4) All data will use a unique code instead of patient personal information, excluding identifiable information such as name, ID number, and contact information, ensuring privacy and security. In the process of paper publication and result presentation, only de-identified data will be used, and it will not contain any information traceable to the patient's personal identity.

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