Case Study Gloria: CyPath® Lung detects rare pulmonary mucinous adenocarcinoma at Stage 1A

Patient Information and Initial Workup

- **Age:** 62 years old
- **Sex:** Female
- **Smoking status:** 100+ pack-year history
- **Medical history:** Stage 1 COPD (FEV1 109%)
- **Status:** High risk due to heavy smoking history and COPD
- **Presentation:** Chest X-ray with abnormal hyperinflation
- **Scans:** LDCT in August 2022, May 2023 and July 2024; PET in September 2022
- **Surveillance:** Patient missed recommended follow-up appointments

NOTE: Actual patient case, but name has been changed to ensure privacy.

Imaging Results

LDCT on 08/15/22 revealed 12mm LUL mixed solid nodule with GGO features, lung cancer probability of 16%. PET scan SUV was 1.19, lung cancer probability 3.5% under Herder model.

8/15/2022 — 12 mm GGO LUL

9/2/2022 — PET SUV 1.19

Missed 2 follow-up appointments; next LDCT scans were 5/25/23 and 10/18/2023 without significant changes. But 7/18/24 LDCT showed growth and less GGO characteristics. By 3/10/25 LDCT nodule had grown to 14mm with cystic changes.

5/25/23 — No significant change

7/18/24 — More solid, less GGO

3/10/25 — Enlarged to 14mm, solid with cystic changes
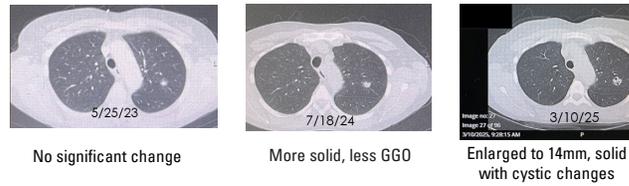
Additional Findings/Next Steps

- **Brock model risk:** 16%/3.5% (Herder model with PET)
- **Nodify:** first blood serum marker test returned "reduced risk" result; second Nodify test came back as "indeterminate" with no circulating antibodies
- Patient refused invasive bronchoscopic biopsy
- **Follow-up PET:** denied by insurance in July 2024

Outcome with CyPath® Lung

- **CyPath® Lung:** 3/7/25 test result: 0.56, likely malignancy
- **Wedge resection:** Successful surgery on 6/11/25 with good margins, negative nodes
- **Diagnosis:** Stage 1A lung mucinous adenocarcinoma
- Patient quit smoking March 2025 and has returned to baseline pulmonary function
- **CyPath® Lung:** detected pulmonary mucinous adenocarcinoma in a high-risk individual whose previous tests and follow-up scans suggested a low probability of cancer

COPD=chronic obstructive pulmonary disease; LDCT=low-dose computed tomography; PET=positron emission tomography; LUL=left lower lobe; GGO=ground-glass opacity.

CyPath Lung

Case Study Mary: Stage IA NSCLC Detected in Patient With Low-Risk PET Result and Risk Calculator Score

Patient Information and Initial Workup

- **Age:** 67 years old
- **Sex:** Female
- **Smoking status:** >50 pack-year history; currently smokes ½ PPD
- **Medical history:** Stage 3 COPD with frequent exacerbations; FEV1 = 45%
- **Family history:** Unremarkable
- **Status:** High risk because of smoking history and COPD
- **Presentation:** Symptoms of RML syndrome
- **LDCT scans:** 4/5/23 and 12/6/23
- **Surveillance:** 6-month follow-up recommended, but patient only agreed to 12-month LDCT

NOTE: Actual patient case, but name has been changed to ensure privacy.

Imaging Results

RML and RUL scans: RML changes on 4/5/23 LDCT improved on 12/6/23 LDCT, consistent with RML syndrome. 4/5/23 RUL LDCT revealed 5-mm nodule with 1.9% Brock model risk that resolved on 12/6/23 LDCT.

4/5/23 12/6/23 — RML scans

4/5/23 12/6/23 — RUL scans
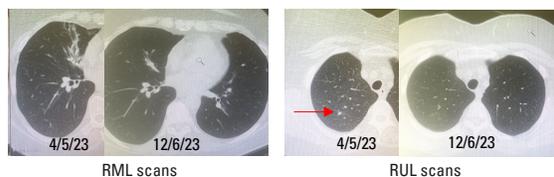
Minor fissure scans: 12/6/23 LDCT scan revealed 3-mm nodule with 0.2% Brock model risk. 2/24/25 LDCT scan revealed 8-mm nodule with 4.6% Brock model risk. 3/6/25 PET scan with SUV of 1.1.

12/6/23

2/24/25

3/6/25

Changing non-calcified nodule in the minor fissure in the context of waxing and waning images in other parts of the lungs.

Additional Findings/Next Steps

- **Brock model risk:** 4.6%
- Bronchoscopy high risk and poor yield without robotic augmentation in a low-risk situation
- Risk calculator and PET suggested inflammation and not cancer, consistent with waxing and waning images

Outcome with CyPath® Lung

- **CyPath® Lung:** 3/4/25 test result: 0.83, likely lung cancer (NOTE: CyPath® Lung was not available at the time of the 2023 scans.)
- **Robotic wedge resection:** R0 resection on 6/5/25, but with close margin
- **Diagnosis:** Stage IA NSCLC; adenocarcinoma histology
- **Radiation oncology referral:** Opinion on close margin and possible need for radiation treatment
- **CyPath® Lung:** Detected lung cancer in high-risk patient with complex nodules when PET and risk models indicated low risk of malignancy

COPD=chronic obstructive pulmonary disease; LDCT=low-dose computed tomography; NSCLC=non–small cell lung cancer; PET=positron emission tomography; PPD=pack per day; RML=right middle lobe; RUL=right upper lobe.

CyPath Lung

Case Study Paula: Complex low-metabolic nodule detected at Stage 1A in low-risk patient

Patient Information and Initial Workup

- **Age:** 80 years old
- **Sex:** Female
- **Smoking status:** Quit in 1999
- **Medical history:** Hypertension, stroke, COVID-19 infection in 2021
- **Status:** Low risk
- **Presentation:** Asthma symptoms post-COVID, including cough, dyspnea, wheezing. Patient placed on Augmentin, asthma inhalers
- **Chest x-ray** showed lobulated opacity in RLL
- **Surveillance:** 6-month follow-up LDCT recommended

NOTE: Actual patient case, but name has been changed to ensure privacy.

Imaging Results

LDCT on 10/3/23 revealed 13mm lobulated nodule in RLL. 10/5/23 PET scan SUV was 2.5, lung cancer probability 15.9%

10/3/23 — 13mm LOBULATED NODULE

PET SUV 2.5, 10/5/23
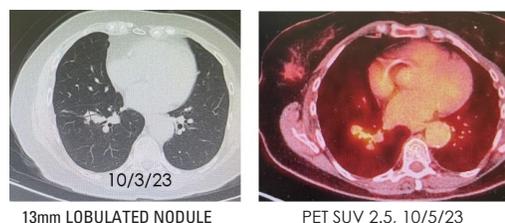
LDCT scans on 1/10/2024 and 7/9/2024 no significant changes in the RLL nodule. LDCT on 5/14/2025 revealed a change in the distal component of the lobulated RLL process, with growth and a more nodular appearance.

1/10/24

7/9/24

5/14/25
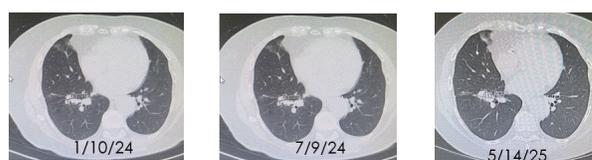
Additional Findings/Next Steps

- **Brock model risk:** 15.9%/16.5% (Herder model with PET)
- **Nodify** blood serum marker test returned "reduced risk" result
- **Bronchoscopy** on 10/9/23 negative for suspicious cells but found S. Viridans consistent with active infection
- **Second bronchoscopy** on 3/17/25 again revealed inflammation markers but no suspicious cells

Outcome with CyPath® Lung

- **CyPath® Lung:** 3/4/25 test result: 0.72, likely malignancy
- **Shared decision-making:** CyPath® Lung result convinced patient to undergo surgery despite conflicting information from other indicators
- **Robotic wedge resection:** Patient referred for surgery in June 2025
- **Diagnosis:** Stage 1A neuroendocrine tumor
- **CyPath® Lung:** Detected lung cancer in low-risk patient when PET, bronchoscopy and serum marker test suggested it was benign inflammation

LDCT=low-dose computed tomography; PET=positron emission tomography; RLL=right lower lobe.

CyPath Lung