

## Lung Cancer Case #1

### History

71 yr-old male w/ h/o HTN, HLD, GERD, CAD, who presented w/ intermittent mild cough, nonproductive. Pt also reports some weight loss. Former heavy smoker. 25 PK-YR (Quit in 2018). -etoh. +FHX: Father diagnosed w/ lung cancer in his early 60s (also a heavy smoker).

### Imaging Work-up:

11/2/22 @ ABC Hospital:

**CT chest:** Large 7.1 cm perihilar mass w/ associated abrupt cut-off of the LT mainstem bronchus. Prominent peribronchial thickening & consolidation of LLL. Evident mediastinal lymphadenopathy.

11/9/22 @ ABC Hospital:

**PET/CT:** Large FDG-avid centrally positioned LT lung & LT hilar mass consistent with neoplasm, likely bronchogenic carcinoma. FUV max 13. FDG-avid mediastinal lymphadenopathy consistent with metastatic disease, SUV max 11.

11/16/22 @ ABC Hospital:

**MRI Brain:** No evidence of metastatic disease.

**Clinical Stage:** IIIB: T4, N2, M0.

### Pathology:

11/7/22 @ XXX Hospital: Endoscopic Bronchoscopy with Ultrasound

- a. Left mainstem bronchus biopsy= Squamous cell carcinoma, poorly differentiated with necrosis. Positive for p64. Negative for TTF-1.
- b. Station 7 LN, endoscopic US-guided FNA: squamous cell carcinoma, poorly differentiated,
- c. LT mainstem bronchus mass brushings: positive for malignant cells, squamous cell carcinoma, poorly differentiated,
- d. Bronchial washings: positive for malignant cells, squamous cell carcinoma, poorly differentiated,
- e. IHC for part B-C positive for p40, focally positive for Napsin A. Negative for TTF1, cytokeratin 7.

### Treatment:

12/5/22 @ ABC Hospital: Carboplatin + paclitaxel X 13 cycles, concurrent with radiation therapy.

12/6/22-1/16/23 @ XXX Hospital: Left lung, 6X/IMRT, 2 Gy x 30 fx= 60 Gy.

3/13/22 @ ABC Hospital: Imfinzi (Durvalumab), Q14 days. Days 1-28, x 13 cycles.

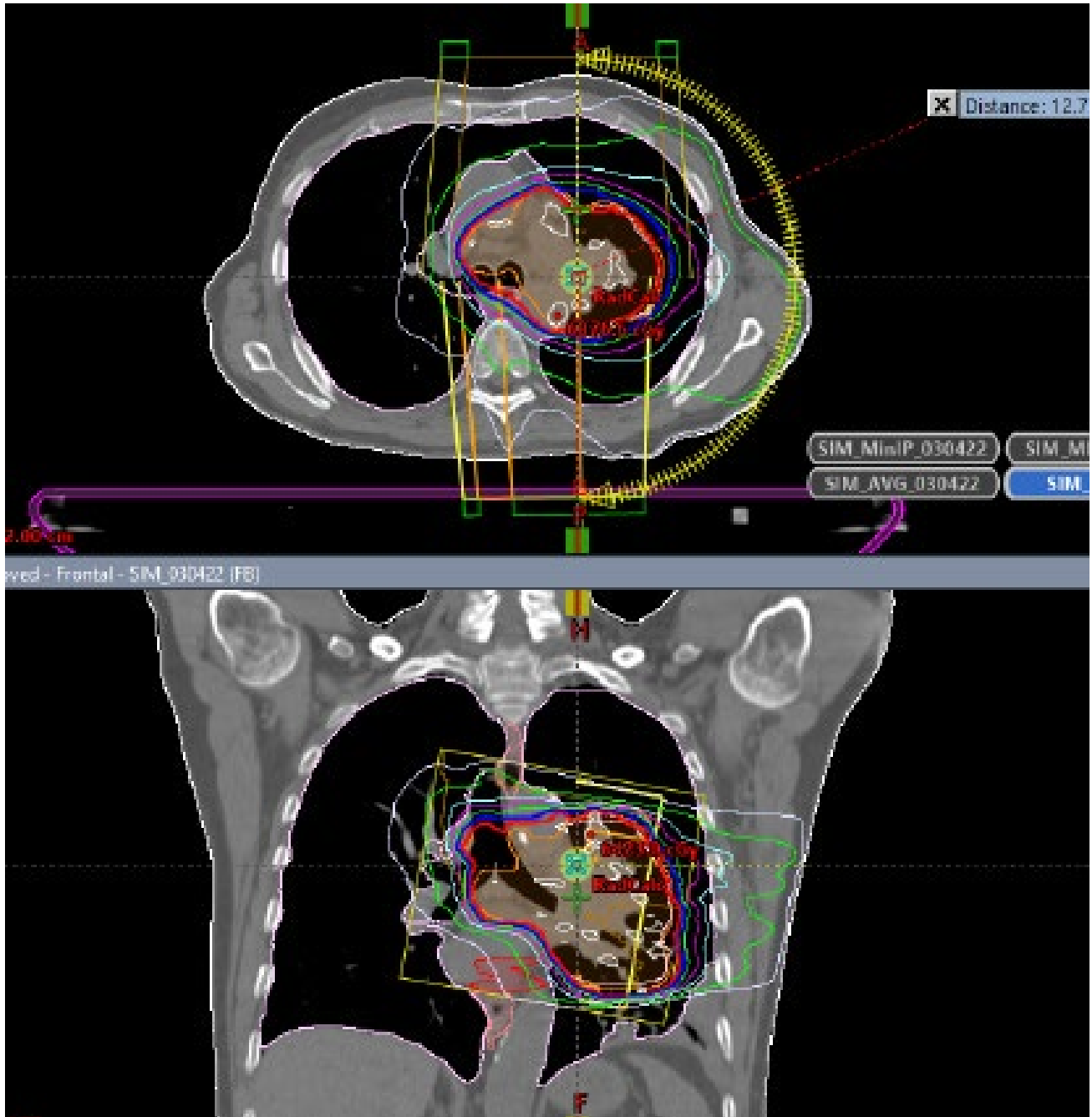
### SUMMARY OF RADIATION FIELDS

Course: C1 Lt Lung

| Site | Ref. ID | Energy | Dose/Fx (cGy) | #Fx | Total Dose (cGy) | Start Date | End Date | Elapsed Days |
|------|---------|--------|---------------|-----|------------------|------------|----------|--------------|
|      |         |        |               |     |                  |            |          |              |

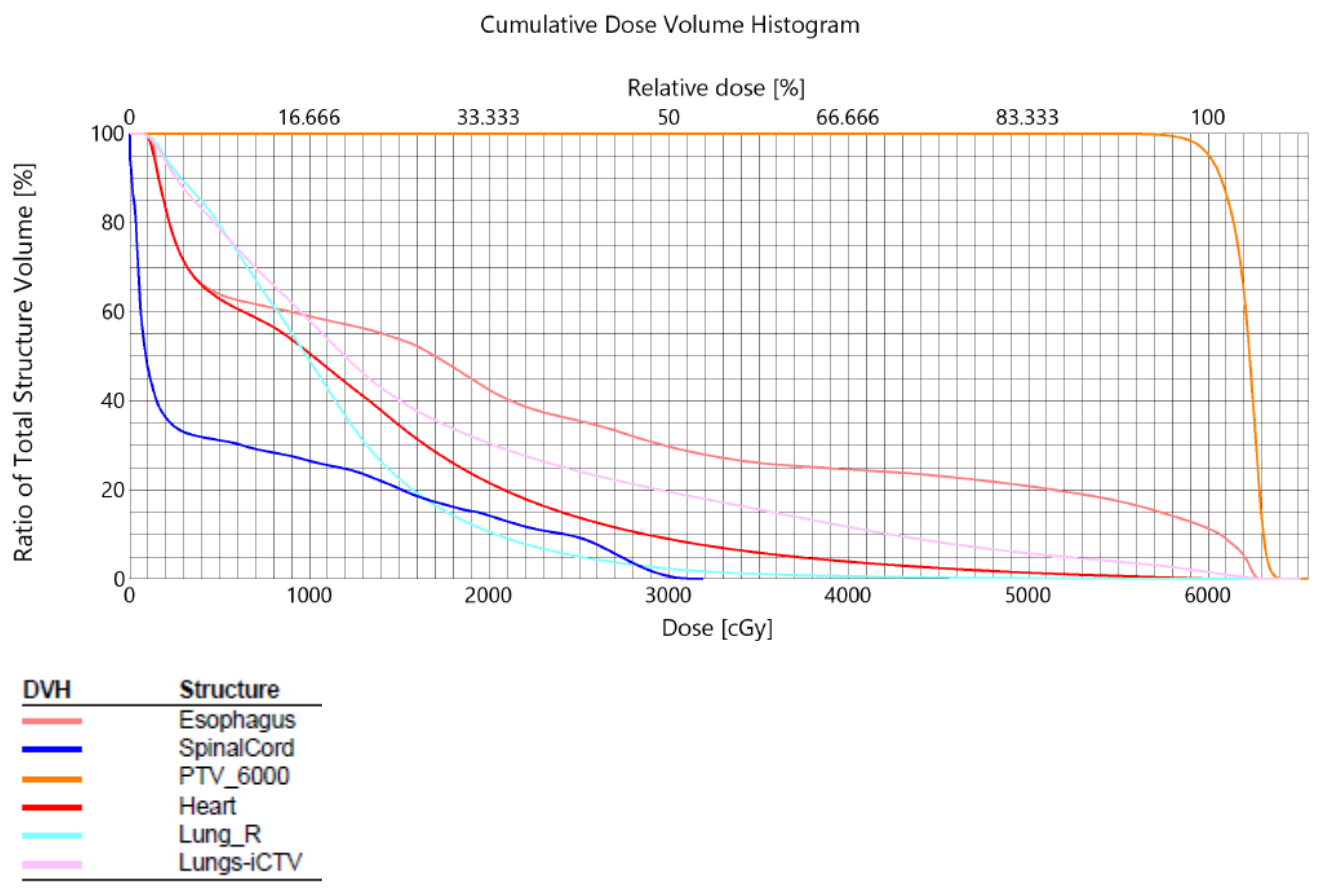
|         |         |         |     |         |       |           |           |    |
|---------|---------|---------|-----|---------|-------|-----------|-----------|----|
| Lt Lung | Lt Lung | 6X/IMRT | 200 | 30 / 30 | 6,000 | 12/6/2022 | 1/16/2023 | 41 |
|---------|---------|---------|-----|---------|-------|-----------|-----------|----|

Are lymph nodes within irradiated volume?



- Isodoses [cGy]**
- ✓ 6600.0
  - ✓ 6300.0
  - ✓ 6000.0
  - ✓ 5700.0
  - ✓ 5400.0
  - ✓ 4800.0
  - ✓ 4200.0
  - ✓ 3000.0
  - ✓ 2000.0

What are organs at risk (OARs) when the lung is irradiated?



## Lung Cancer Case #2

### History:

69 yr-old female w/ h/o heavy smoking hx in the past (quit two yrs ago), who presented w/ screen-detected right lung cancer during low-dose screening chest CT. Patient is asymptomatic. -Etoh. +fhx: mother with lung cancer (smoker). Sister with endometrial cancer.

### Imaging Work-up:

12/8/22 @ AAA Hospital:

**CT chest:** 4.4 cm mass-like opacity in right upper lobe, concerning for neoplastic process. Indeterminate right hilar lymphadenopathy.

12/16/22 @ AAA Hospital:

**PET/CT:** FDG-avid 4.9 cm mass in RUL consistent with bronchogenic carcinoma. No other FDG-avid activity seen.

**Clinical Stage IIA:** cT2b, N0, M0

### Pathology:

1/3/23 @ AAA Hospital:

- f. RUL navigational bronchoscopy= positive for malignancy, squamous cell carcinoma.
- g. Bronchial wash= positive for malignancy, squamous cell carcinoma

### Treatment:

**Surgery-** 1/9/23 @ AAA Hospital:

Robotic-assisted RUL lobectomy with mediastinal lymph node dissection: 6.1 cm invasive squamous cell carcinoma, keratinizing @ RUL. Grade 2. Visceral pleural invasion present. Involves parietal pleura. No Lymphovascular invasion. All resection margins are negative, closest at parenchyma, 1.1 cm.

Number of LNs examined= 21

Number of LNs involved= 0.

Lymph nodes examined: 4R, 8R, 10R, 11R, 12R, 13R, subcarinal.

**Pathologic stage:** pT3, pN0.

**Chemotherapy** on 2/20/23 @ AAA Hospital: Carboplatin + paclitaxel concurrent with EBRT.

**Radiation Therapy-** 2/20/23-4/3/23 @ ZZZ Hospital:

### SUMMARY OF RADIATION FIELDS

| Site    | Energy  | Dose/Fx (cGy) | #Fx     | Total Dose (cGy) | Start Date | End Date |
|---------|---------|---------------|---------|------------------|------------|----------|
| RT Lung | 6X/VMAT | 200           | 30 / 30 | 6,000            | 2/20/23    | 4/3/23   |

Are lymph nodes within irradiated volume?

## Lung Cancer Case #3

### History:

60 yr-old male w/ h/o GERD, HTN, HLD, who presented w/ interval change in size of known right upper lobe lung nodule. Former heavy smoker. Social etoh. -FHX.

### Imaging Work-up:

#### 10/11/22 @ ABC Hospital:

**CT chest:** Increase in previous RUL lung lesion, now measuring 0.9 cm (previously measured 0.4 cm), concerning for primary pulmonary neoplasm. No mediastinal/thoracic lymphadenopathy.

#### 10/25/22 @ ABC Hospital:

**PET/CT:** RUL hypermetabolic uptake in 2.0 cm mass, consistent with index tumor activity. No other FDG-avid activity seen.

#### 11/2/22

- RUL navigational bronchoscopy= positive for malignancy, squamous cell carcinoma

### OnkoSight Advanced Lung Cancer NGS Report:

11/2/22

#### **Detected Genomic Alterations:**

Tier II: Variants of Potential Clinical Significance:

- KRAS
- POLD1 p
- TP53p

Tier III: Variants of Unknown Clinical Significance (VUS):

- ATR p

#### **Immunotherapy Biomarkers:**

Tumor Mutation Burden: Low (3.5 Mutations/MB)

Microsatellite Instability: MSI Negative (0%)

#### **Pertinent Negative Results:**

AKT1, ALK, BRAF, CHEK1, DDR2, EGFR, ERBB2, FGFR1, MAP2K1M, MET, NRAS, NTRK1, PIK3CA, POLE, ROS1, STK11, TERT.

#### **KEYTRUDA PD-L1 Immunohistochemical Analysis (NSCLC):**

Tumor Proportion Score <1%/Negative.

Clinical Stage:

Surgery Pathology:

11/14/22 @ ABC Hospital:

- Robotic-assisted RUL wedge resection & lobectomy= 2.1 cm invasive squamous cell carcinoma, basaloid, G1. Positive for visceral pleural invasion. No LVI. Margins negative. Regional lymph nodes= 0/12 negative. (LNs stations examined: 4R, 8R, 9R, 10R, 11R, 7L). Pathologic stage 1A2: pT1b, pN0.

Treatment:

**Surgery-** 11/14/22 @ AAA Hospital: Robotic-assisted RUL wedge resection & lobectomy with regional mediastinal lymph node dissection.

**Radiation Therapy-** 11/28/22-1/9/23 @ ZZZ Hospital:

#### SUMMARY OF RADIATION FIELDS

| Site    | Energy  | Dose/Fx (cGy) | #Fx | Total Dose (cGy) | Start Date | End Date |
|---------|---------|---------------|-----|------------------|------------|----------|
| RT Lung | 6X/SBRT | 800           | 5/5 | 4,000            | 11/28/22   | 12/2/23  |