Discharge Diagnosis: Pneumonitis (Grade 2) Secondary to Pembrolizumab, Successfully Managed With Corticosteroids

Patient: Katherine Chen (DOB 1972-12-06)
Medical Record Number: SYN128

Date of Admission: 2025-04-02 **Date of Discharge:** 2025-04-14
Admitting Physician: Dr. R. Patel (Medical Oncology)
Consulting Physicians: Dr. T. Nelson (Pulmonology), Dr. A. Kapoor (Infectious Disease)

1. Detailed Oncological Diagnosis:

Primary Diagnosis: Non-Small Cell Lung Cancer (NSCLC), Adenocarcinoma, Stage IVA
Date of Initial Diagnosis: March 23, 2023

Histology:

- Video-assisted thoracoscopic surgery (VATS) biopsy of right upper lobe primary and right lower lobe nodule (March 2023) revealed moderately differentiated adenocarcinoma with predominantly acinar and papillary patterns.
- Immunohistochemistry: Positive for TTF-1, CK7, Napsin A. Negative for p40, CK20, CDX2.
- Molecular testing:
  - EGFR: Wild-type
  - ALK: No rearrangement
  - ROS1: No rearrangement
  - BRAF: Wild-type
  - KRAS: Wild-type
  - MET: No exon 14 skipping mutation
  - NTRK: No fusion
  - RET: No rearrangement
  - HER2: No mutation
- PD-L1 expression: 90% Tumor Proportion Score (TPS), CPS 95, IC 25%

Staging:

- TNM (8th edition): cT2aN0M1a (Stage IVA)
- Imaging Studies:
  - Chest CT (March 2023): 3.5 cm spiculated mass in right upper lobe with two satellite nodules in right lower lobe (1.8 cm and 1.2 cm). No hilar or mediastinal lymphadenopathy.
  - PET/CT (March 2023): FDG-avid primary mass (SUVmax 12.8) and right lower lobe nodules with similar FDG uptake (SUVmax 9.6 and 8.3). No evidence of extrathoracic metastases.
  - Brain MRI (March 2023): No evidence of brain metastases.

2. History of Oncological Treatment:

Immunotherapy:

- Pembrolizumab 200 mg IV every 3 weeks
- Initiated April 14, 2023
- Ongoing with excellent radiographic response and clinical benefit
- Last dose administered March 27, 2025 (cycle 31)
- Therapy temporarily held due to current pneumonitis

Prior Procedures:

- VATS biopsy for diagnosis (March 18, 2023)
- Mediastinoscopy (March 18, 2023): Negative for nodal involvement

3. Imaging:

- CT Chest/Abdomen/Pelvis (March 2025, after 31 cycles of pembrolizumab): Near-complete response with 90% reduction in size of primary tumor (now 0.4 cm). Previous satellite nodules no longer visible. No new metastatic disease.
- Chest CT (April 3, 2025, on admission): Bilateral ground-glass opacities predominantly in the lower lobes. Primary tumor findings unchanged from March 2025 scan. No pleural effusion or pneumothorax.

4. Comorbidities:

- Asthma (well-controlled, diagnosed 2005)
- Hashimoto's thyroiditis (diagnosed 2015)
- Depression (diagnosed 2018)
- Irritable bowel syndrome (diagnosed 2019)
- Migraines with visual aura (diagnosed 2010)
- Former smoker (10 pack-year history, quit 2012)

5. Physical Exam at Admission:

General: 52-year-old female appearing mildly distressed, with evident fatigue and intermittent dry cough.

Vitals: BP 124/76 mmHg, HR 92 bpm, RR 22/min, Temp 37.6°C, SpO2 93% on room air, decreasing to 91% with ambulation.

HEENT: Normocephalic, atraumatic. Mucous membranes moist. No oral lesions.

Neck: Supple. No cervical or supraclavicular lymphadenopathy. No JVD.

Cardiovascular: Tachycardic but regular rhythm. Normal S1, S2. No murmurs, rubs, or gallops.

Respiratory: Bilateral fine crackles at the bases. No wheezing. Decreased breath sounds in right upper lobe (consistent with known primary tumor).

Abdomen: Soft, non-tender, non-distended. No hepatosplenomegaly. Normal bowel sounds.

Extremities: No edema, clubbing, or cyanosis.

Skin: No rashes or lesions.

Neurological: Alert and oriented x3. Cranial nerves II-XII intact. Motor strength 5/5 throughout. Sensation intact.

ECOG Performance Status: 1 (increased from baseline 0 due to respiratory symptoms)

6. Hospital Course Summary:

Ms. Chen was admitted for evaluation and management of progressive dyspnea, non-productive cough, and mild hypoxemia that developed 7 days after her 31st cycle of pembrolizumab for metastatic NSCLC. She had achieved near-complete response to immunotherapy over the past 24 months with excellent tolerance until the current presentation.

Upon admission, oxygen saturation was 93% on room air with exertional desaturation to 91%. Chest CT revealed new bilateral ground-glass opacities predominantly in the lower lobes, consistent with pembrolizumab-induced pneumonitis. Infectious workup including blood cultures, respiratory viral panel, sputum culture, and COVID-19 PCR testing were negative. Bronchoscopy with bronchoalveolar lavage (BAL) performed on hospital day 2 showed lymphocytic predominance (65%) with negative cultures, confirming the diagnosis of immune-related pneumonitis.

Treatment with methylprednisolone 1 mg/kg/day IV (80 mg daily) was initiated, with significant clinical improvement noted by hospital day 3. Oxygen requirements normalized, and repeat chest X-ray on day 5 showed partial resolution of infiltrates. The patient was transitioned to oral prednisone 80 mg daily on day 6 with continued clinical stability.

Pulmonology consultation classified the pneumonitis as Grade 2 (symptomatic, limiting instrumental ADLs, medical intervention indicated). Infectious Disease consultation ruled out opportunistic infections and advised on empiric antimicrobial prophylaxis during high-dose steroid therapy.

By discharge on day 12, the patient was breathing comfortably on room air with resolution of cough and normal oxygenation with activity. Repeat chest X-ray showed continued improvement in bilateral infiltrates. She was discharged on a prolonged prednisone taper with plans to hold pembrolizumab until complete resolution of pneumonitis and completion of steroid taper.

A multidisciplinary tumor board discussion recommended resumption of pembrolizumab at a reduced dose (100 mg) after complete resolution of pneumonitis, given the excellent oncologic response and first significant immune-related adverse event after 31 cycles.

7. Medication at Discharge:

Immunotherapy (HELD):

- Pembrolizumab (temporarily discontinued, to be reevaluated in 4-6 weeks)

Corticosteroid Taper:

- Prednisone 80 mg PO daily for 7 days
- Then 60 mg PO daily for 7 days
- Then 40 mg PO daily for 7 days
- Then 30 mg PO daily for 7 days
- Then 20 mg PO daily for 7 days
- Then 10 mg PO daily for 7 days
- Then 5 mg PO daily for 7 days
- Then discontinue

Prophylactic Medications (During Steroid Taper):

- Trimethoprim-sulfamethoxazole 800/160 mg PO three times weekly (PCP prophylaxis)
- Fluconazole 200 mg PO daily (fungal prophylaxis)
- Pantoprazole 40 mg PO daily (GI prophylaxis)
- Calcium carbonate 600 mg + Vitamin D 400 IU PO BID

Pre-existing Chronic Medications:

- Levothyroxine 125 mcg PO daily (take on empty stomach)
- Montelukast 10 mg PO daily (asthma)
- Fluticasone/salmeterol 250/50 mcg inhaler 1 inhalation BID (asthma)
- Escitalopram 20 mg PO daily (depression)
- Sumatriptan 100 mg PO PRN migraine (maximum 9 tablets/month)

8. Further Procedure / Follow-up:

Oncology Follow-up:

- Follow up with Dr. R. Patel in 2 weeks (April 28, 2025)
- Monitor for resolution of pneumonitis symptoms
- Discuss timeline for potential pembrolizumab resumption
- Consider dosage reduction from 200 mg to 100 mg when resumed

Pulmonology Follow-up:

- Follow up with Dr. T. Nelson in 3 weeks (May 5, 2025)
- Assess resolution of pneumonitis
- Determine if additional pulmonary function testing is indicated

Laboratory Monitoring:

- CBC, CMP, and TSH weekly for first month of steroid taper
- Monitor fasting glucose while on high-dose steroids
- LDH, CRP, and ESR at next oncology visit

Imaging:

- Chest X-ray in 2 weeks (April 28, 2025)
- Repeat chest CT in 4 weeks (May 12, 2025) to assess resolution of pneumonitis

- Next routine CT Chest/Abdomen/Pelvis for oncologic monitoring to be determined based on pneumonitis resolution

Patient Education Provided:

- Detailed explanation of immune-related pneumonitis and its management
- Steroid taper schedule and importance of strict adherence
- Warning signs requiring immediate medical attention (worsening dyspnea, fever, chest pain)
- Importance of infection prevention while on high-dose steroids
- Blood glucose monitoring instructions (check fasting glucose 3 times weekly)
- Medication side effects and management strategies
- Activity progression guidelines
- Contact information for oncology nurse navigator and on-call physician

9. Lab Values (Excerpt):

Parameter	Baseline (3/2023)	Previous Visit (3/2025)	Admission (4/2/2025)	Discharge (4/14/2025)	Units	Reference Range
WBC	7.6	7.2	10.8	15.4	× 10^9/L	4.0-11.0
Hemoglobin	13.2	12.8	12.6	12.9	g/dL	12.0-16.0 (F)
Platelets	265	248	282	296	× 10^9/L	150-400
Creatinine	0.74	0.78	0.82	0.80	mg/dL	0.5-1.1
ALT	22	28	34	42	U/L	7-56
AST	25	26	38	45	U/L	8-48
Alk Phos	78	82	84	86	U/L	45-115
Total Bilirubin	0.5	0.6	0.6	0.5	mg/dL	0.2-1.2
Albumin	4.2	4.0	3.8	3.9	g/dL	3.5-5.0
Glucose	98	102	110	162	mg/dL	70-100
TSH	2.8	3.2	3.0	-	mIU/L	0.4-4.0
Free T4	1.2	1.1	1.2	-	ng/dL	0.8-1.8
CRP	2.5	3.2	48.5	12.6	mg/L	<5.0
LDH	185	164	248	196	U/L	125-220

Arterial Blood Gas (4/2/2025) on Room Air:

- pH: 7.46
- pCO2: 36 mmHg
- pO2: 78 mmHg
- HCO3: 24 mEq/L
- O2 Saturation: 93%

Bronchoalveolar Lavage Results (4/4/2025):

- Macroscopic: Clear fluid
- Cell count: 420 cells/µL (elevated)

- Differential: Lymphocytes 65%, Macrophages 30%, Neutrophils 4%, Eosinophils 1%
- Gram stain: No organisms seen
- Cultures: No growth at 5 days
- Cytology: No malignant cells
- Special stains: Negative for Pneumocystis, fungi, and acid-fast bacilli
- PCR testing: Negative for respiratory viruses

Pulmonary Function Tests (4/5/2025):

- FEV1: 72% predicted (decreased from 88% baseline)
- FVC: 75% predicted (decreased from 90% baseline)
- DLCO: 68% predicted (decreased from 85% baseline)
- TLC: 80% predicted

Electronically Signed By:
Dr. R. Patel (Medical Oncology)
Date/Time: 2025-04-14 15:30

Dr. T. Nelson (Pulmonology)
Date/Time: 2025-04-14 14:15

Dr. A. Kapoor (Infectious Disease)
Date/Time: 2025-04-13 16:40