GREENWOOD CANCER INSTITUTE

DISCHARGE SUMMARY

CONFIDENTIAL MEDICAL RECORD

DIAGNOSES

1. Stage IV Non-Small Cell Lung Cancer (adenocarcinoma) with liver metastasis
2. Immune-related hepatitis (Grade 2) secondary to pembrolizumab
3. Essential hypertension
4. Migraine with aura
5. Depression
6. Osteopenia

ONCOLOGIC HISTORY Ms. Davis is a 64-year-old female initially diagnosed with stage IV non-small cell lung cancer on September 28, 2021. She presented with fatigue, unintentional weight loss of 18 pounds over 3 months, and right upper quadrant discomfort. CT scan revealed a 3.7 cm left upper lobe mass with multiple liver metastases (largest measuring 2.5 cm in segment VII). PET/CT confirmed hypermetabolic activity in both the primary lung lesion (SUVmax 14.3) and liver lesions (SUVmax 9.8-12.5). Brain MRI was negative for intracranial metastases.

Liver biopsy confirmed metastatic adenocarcinoma consistent with lung primary. Immunohistochemistry was positive for TTF-1, Napsin A, and CK7. Molecular testing was negative for actionable driver mutations (EGFR, ALK, ROS1, BRAF, MET, RET, NTRK, and KRAS all wild-type). PD-L1 testing showed high expression with Tumor Proportion Score (TPS) of 90%, Combined Positive Score (CPS) of 95%, and Immune Cell (IC) score of 15%.

Given the high PD-L1 expression and absence of driver mutations, she was initiated on first-line pembrolizumab monotherapy (200mg IV every 3 weeks) on October 20, 2021. She has demonstrated an excellent and durable response to treatment with significant regression of both primary tumor and liver metastases. Most recent imaging prior to current admission (January 2025) showed a residual 0.8 cm left upper lobe nodule and near-complete resolution of liver metastases (largest measuring 0.4 cm).

The current admission was prompted by abnormal liver function tests noted during routine laboratory monitoring, raising concern for immune-related hepatitis.

DETAILED HISTORY

PAST MEDICAL HISTORY:

1. Essential hypertension (diagnosed 2002)
2. Migraine with aura (diagnosed 1998)
3. Major depressive disorder (diagnosed 2010)
4. Osteopenia (diagnosed 2018)
5. Cholecystectomy (2008)
6. Hysterectomy for uterine fibroids (2005)

SOCIAL HISTORY: Ms. Davis is a retired high school English teacher. She has never smoked. Social alcohol use (1-2 glasses of wine weekly) until cancer diagnosis, none since. Lives alone but has supportive adult daughter nearby. Exercises regularly with daily walks. No recreational drug use.

FAMILY HISTORY:

- Father: Prostate cancer at age 72, died of myocardial infarction at 78
- Mother: Alive at 87 with hypertension and osteoarthritis
- Sister: Breast cancer at age 51, currently in remission
- No known family history of lung cancer

ALLERGIES:

- Sulfa drugs (rash)
- Codeine (nausea)

HOME MEDICATIONS PRIOR TO ADMISSION:

1. Pembrolizumab 200mg IV every 3 weeks (last dose on 03/22/2025)
2. Amlodipine 5mg PO daily
3. Hydrochlorothiazide 12.5mg PO daily
4. Sertraline 100mg PO daily
5. Sumatriptan 50mg PO PRN for migraine (rarely used)
6. Calcium carbonate 600mg + Vitamin D 400 IU PO BID
7. Multivitamin PO daily
8. Vitamin D3 2000 IU PO daily

CURRENT PRESENTATION The patient presented for scheduled lab work on 04/01/2025 prior to her next planned pembrolizumab infusion. Laboratory studies revealed elevated liver enzymes (ALT 342 U/L, AST 281 U/L) compared to normal values one month prior. She reported mild fatigue and slight right upper quadrant discomfort for approximately 1 week but otherwise felt well. She denied fever, jaundice, change in bowel habits, rash, or other symptoms. She was contacted and admitted the following day for evaluation and management of suspected immune-related hepatitis.

PHYSICAL EXAMINATION AT ADMISSION

Vital Signs:

- Temperature: 37.0°C
- Heart Rate: 78 bpm
- Blood Pressure: 132/84 mmHg
- Respiratory Rate: 16/min
- SpO2: 98% on room air

General: Well-appearing female in no acute distress.

HEENT: Normocephalic, atraumatic. Sclera non-icteric. Mucous membranes moist.

Neck: Supple, no lymphadenopathy or thyromegaly.

Cardiovascular: Regular rate and rhythm. Normal S1 and S2. No murmurs, rubs, or gallops.

Respiratory: Clear to auscultation bilaterally. No wheezing, rales, or rhonchi.

Abdominal: Soft, mild tenderness in right upper quadrant without rebound or guarding. No hepatosplenomegaly appreciated. Surgical scars from prior cholecystectomy and hysterectomy noted.

Musculoskeletal: Normal range of motion. No edema or tenderness.

Skin: No rash, jaundice, or other lesions.

Neurological: Alert and oriented x3. Cranial nerves II-XII intact. 5/5 strength in all extremities. Sensation intact. Gait normal.

DIAGNOSTIC STUDIES

Laboratory Studies:

Admission Labs (04/02/2025):

- Complete Blood Count:
  - WBC: 5.8 × 10^3/µL (normal)
  - Hemoglobin: 13.2 g/dL (normal)
  - Hematocrit: 39.8% (normal)
  - Platelets: 267 × 10^3/µL (normal)
- Liver Function Tests:
  - ALT: 342 U/L (High; normal range: 7-56)
  - AST: 281 U/L (High; normal range: 10-40)
  - Alkaline Phosphatase: 136 U/L (normal range: 44-147)
  - Total Bilirubin: 1.2 mg/dL (normal range: 0.1-1.2)
  - Direct Bilirubin: 0.4 mg/dL (normal range: 0.0-0.3)
  - Albumin: 3.8 g/dL (normal range: 3.4-5.0)
  - Total Protein: 7.1 g/dL (normal range: 6.0-8.3)
- Comprehensive Metabolic Panel:
  - Sodium: 139 mmol/L (normal)
  - Potassium: 4.1 mmol/L (normal)

    - Chloride: 104 mmol/L (normal)
    - CO_2: 25 mmol/L (normal)
    - BUN: 15 mg/dL (normal)
    - Creatinine: 0.8 mg/dL (normal)
    - Glucose: 98 mg/dL (normal)
    - Calcium: 9.4 mg/dL (normal)
- Coagulation Studies:
    - PT: 12.2 seconds (normal)
    - INR: 1.0 (normal)
    - PTT: 29 seconds (normal)
- Additional Studies:
    - C-reactive protein: 12 mg/L (mildly elevated; normal <10)
    - ESR: 22 mm/hr (normal for age)
    - ANA: Negative
    - Anti-smooth muscle antibody: Negative
    - Hepatitis A, B, and C serologies: Negative
    - Thyroid function tests: Within normal limits

Trending Labs During Admission:

Test	04/02/2025	04/04/2025	04/06/2025
ALT (U/L)	342	286	178
AST (U/L)	281	212	132
ALP (U/L)	136	142	129
T. Bili (mg/dL)	1.2	1.0	0.9

Imaging Studies:

Abdominal Ultrasound (04/02/2025): No evidence of biliary obstruction or dilation. Liver appears normal in size and echogenicity. Status post cholecystectomy. No hepatic masses visualized. Spleen and kidneys unremarkable.

Triple-phase CT Abdomen with contrast (04/03/2025): Significantly improved hepatic metastatic disease compared to prior imaging (01/15/2025), with only one faintly visible 0.4 cm hypodense lesion in segment VII. No new lesions identified. No biliary dilation. No evidence of portal vein thrombosis.

CT Chest (04/03/2025): Stable 0.8 cm nodule in left upper lobe, significantly decreased from initial presentation. No new pulmonary lesions. No pleural effusion. No significant lymphadenopathy.

Liver Biopsy (04/04/2025): Pathology revealed lobular hepatitis with predominant CD8+ T-cell infiltration, scattered plasma cells, and rare eosinophils. Minimal interface hepatitis. No malignant cells identified. No fibrosis, granulomas, or viral inclusions. Findings consistent with immune checkpoint inhibitor-associated hepatitis, grade 2.

HOSPITAL COURSE

Ms. Davis was admitted for evaluation and management of suspected immune-related hepatitis secondary to pembrolizumab therapy. Infectious and autoimmune workup was negative. Imaging showed improved oncologic disease with no evidence of progression. Liver biopsy confirmed immune-related hepatitis.

Per institutional protocol for grade 2 immune-related hepatitis, pembrolizumab was temporarily held and oral prednisone was initiated at 0.5 mg/kg/day (40mg daily). Gastroenterology was consulted and agreed with management plan. Ursodiol was added for hepatoprotection.

The patient's liver enzymes showed steady improvement during hospitalization, with ALT decreasing from 342 U/L to 178 U/L and AST decreasing from 281 U/L to 132 U/L over a 5-day period. Right upper quadrant discomfort resolved within 48 hours of starting corticosteroids.

Hypertension was well-controlled during hospitalization on home medications. Blood glucose levels remained within normal range on daily monitoring despite corticosteroid therapy.

The patient participated in education regarding immune-related adverse events and steroid taper schedule. She verbalized understanding of when to contact the oncology team for worsening or new symptoms.

DISCHARGE MEDICATIONS

1. Prednisone 40mg PO daily for 7 days, then taper as follows:
    - 30mg daily for 7 days
    - 20mg daily for 7 days
    - 10mg daily for 7 days
    - 5mg daily for 7 days, then discontinue
2. Pantoprazole 40mg PO daily (while on prednisone)
3. Ursodiol 300mg PO TID
4. Amlodipine 5mg PO daily
5. Hydrochlorothiazide 12.5mg PO daily
6. Sertraline 100mg PO daily
7. Sumatriptan 50mg PO PRN for migraine
8. Calcium carbonate 600mg + Vitamin D 400 IU PO BID
9. Vitamin D3 2000 IU PO daily
10. Multivitamin PO daily

DISCHARGE INSTRUCTIONS

1. Take all medications as prescribed, especially following the prednisone taper schedule exactly
2. Check blood glucose daily while on prednisone therapy
3. Monitor for signs of worsening hepatitis (increasing abdominal pain, yellowing of skin/eyes, dark urine, clay-colored stools)
4. Avoid alcohol consumption and acetaminophen while liver enzymes remain elevated

5. Follow up with laboratory monitoring as scheduled
6. Maintain adequate hydration
7. Resume normal activity as tolerated
8. Follow low-sodium diet to manage blood pressure
9. Call oncology team immediately for:
    - Fever > 100.4°F
    - Severe abdominal pain
    - Yellow discoloration of skin or eyes
    - Severe fatigue, confusion, or disorientation
    - Shortness of breath
    - Any new or concerning symptoms

FOLLOW-UP PLAN

1. Laboratory testing (CBC, CMP, LFTs):
    - Monday, April 14, 2025
    - Monday, April 21, 2025
    - Then weekly until liver enzymes normalize
2. Oncology Appointment:
    - Dr. Elizabeth Warren: Monday, April 28, 2025 at 10:00 AM
3. Gastroenterology Appointment:
    - Dr. Michael Levine: Thursday, April 24, 2025 at 1:30 PM
4. Imaging:
    - Restaging CT Chest/Abdomen/Pelvis: Scheduled for June 16, 2025
5. Next pembrolizumab infusion will be determined based on resolution of hepatitis, with earliest possible date of April 28, 2025, pending normalization of liver enzymes (ALT/AST < 3x ULN)

ONCOLOGIC ASSESSMENT

Ms. Davis has stage IV non-small cell lung adenocarcinoma with liver metastasis, diagnosed in September 2021. The patient has wild-type status for all tested oncogenic drivers and high PD-L1 expression (TPS 90%, CPS 95%, IC 15%).

She has received first-line pembrolizumab monotherapy since October 2021 (approximately 42 months of therapy) with exceptional response. The primary tumor has decreased from 3.7 cm to 0.8 cm (78% reduction), and liver metastases have nearly resolved with only a residual 0.4 cm lesion remaining (84% reduction from largest initial lesion measuring 2.5 cm).

Current disease status is partial response with ongoing clinical benefit. The patient has tolerated therapy well until the current episode of immune-related hepatitis. This represents her first significant immune-related adverse event (irAE) in nearly 3.5 years of checkpoint inhibitor therapy.

Literature supports continuing immunotherapy after resolution of grade 2 immune-related hepatitis, particularly in patients with ongoing clinical benefit. The risk of irAE recurrence is approximately 30%, but most recurrences can be managed successfully. Given the patient's

excellent and durable response to pembrolizumab with no evidence of disease progression, the plan is to resume therapy after hepatitis resolves to grade ≤1 (ALT/AST < 3x ULN).

Patients with advanced NSCLC and high PD-L1 expression treated with first-line pembrolizumab monotherapy have shown durable responses, with some patients continuing to benefit beyond 3 years. The median progression-free survival in this population exceeds 20 months, and some patients achieve long-term disease control resembling a plateau in the survival curve. Ms. Davis appears to be among these exceptional responders, and continued pembrolizumab therapy is recommended as long as clinical benefit persists without unacceptable toxicity.

PROGNOSIS

Ms. Davis has demonstrated an exceptional response to pembrolizumab monotherapy with ongoing disease control after 42 months of treatment. Her clinical course is notably better than the median outcomes reported in clinical trials for similar patients. Given her excellent performance status, limited comorbidities, and durable response to therapy, her prognosis remains favorable with potential for continued long-term disease control.

The current immune-related hepatitis is expected to resolve completely with appropriate management and should not significantly impact her long-term oncologic outcome. Approximately 70% of patients who resume checkpoint inhibitor therapy after irAE resolution do not experience recurrence of the same adverse event.

Electronically signed by:

Elizabeth Warren, MD, PhD
Medical Oncology
Greenwood Cancer Institute
License #: MD123456
Date: April 10, 2025 15:43

PATIENT INFORMATION

- **NAME:** Katherine Davis
- **PATIENT ID:** SYN030
- **DOB:** 12/15/1960 (f)
- **ADMISSION DATE:** 04/02/2025
- **DISCHARGE DATE:** 04/10/2025
- **ATTENDING ONCOLOGIST:** Dr. Elizabeth Warren