



# Comprehensive Review of Adult T-Cell Leukemia-Lymphoma

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## PURPOSE

- Highlight the common imaging presentations in patients with Adult T-cell Leukemia-Lymphoma (ATL)
- Review specific cases emphasizing the wider range of imaging manifestations of ATL throughout the body
- Identify important imaging findings associated with disease complications and treatment

## BACKGROUND

- Rare aggressive peripheral T-cell malignancy associated with the HTLV1 Virus (0.5-3.5% lifetime risk for infected individual) that develops over long latency period
- Most prevalent in southern Japan, Caribbean basin, Africa and Brazil
- Four subtypes: acute, lymphoma, chronic and smoldering
- Overall survival is poor especially in aggressive subtypes (acute and lymphoma)

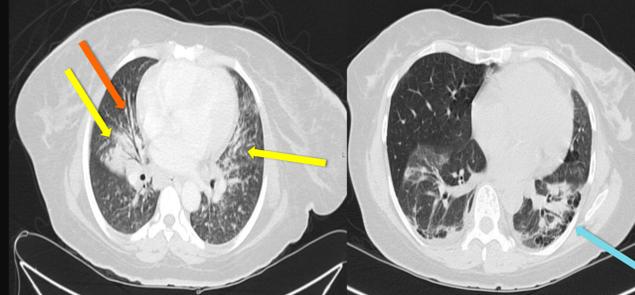
## IMAGING

- Pulmonary – atypical lymphocytic infiltration into peribronchovascular interstitium and alveoli with resulting interlobar septal thickening, nodules, ground glass opacities and pleural effusion
- Musculoskeletal – infiltration, cortical lytic lesions, metaphyseal lucent lines and pathologic fractures
- Lymphatics – hepatosplenomegaly and generalized lymphadenopathy
- GI/GU/Peritoneum – renal and hepatic lesions, gastric lesions associated with H. Pylori
- Cutaneous – plaque-like lesions, scabies and herpes zoster (often radiographically occult and diagnosed on clinical grounds)
- Complications/Treatment
  - Infections, hemorrhage
  - Surveillance with CT and PET (osseous resolution with chemotherapy noted)

## MAJOR TEACHING POINTS

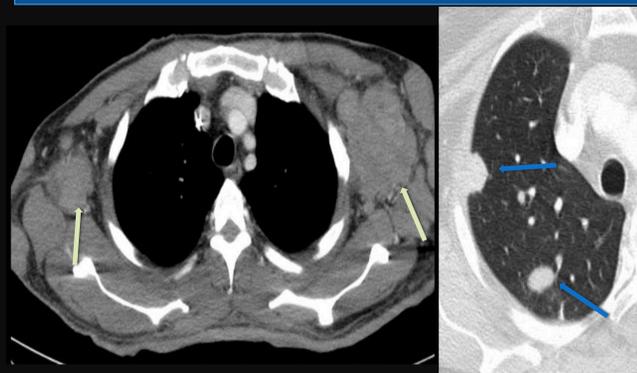
- ATL is a rare peripheral T-cell malignancy with varied imaging appearances throughout the body
- ATL related complications include infections and hemorrhage and disease monitoring can be performed with CT and PET

## CASE 1



Axial CT scans in lung window demonstrate **central consolidation, bronchovascular thickening** and **scattered ground glass opacities**. **Lower lobe bronchiectasis and cystic change with architectural distortion** is also noted. These findings are indicative of hemorrhage and opportunistic infection.

## CASE 2



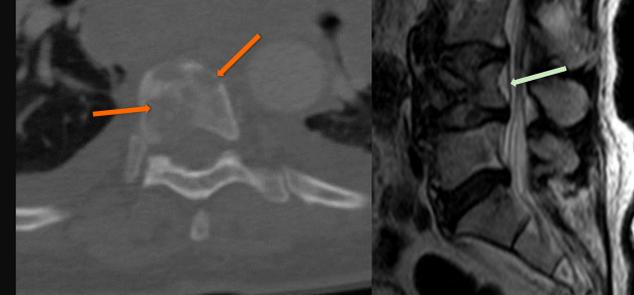
Axial CECT scans on soft and lung window demonstrate **bilateral bulky axillary lymphadenopathy** and **multiple peripheral parenchymal nodules of varying sizes**. These findings are consistent with lymphomatous parenchymal disease.

## CASE 3



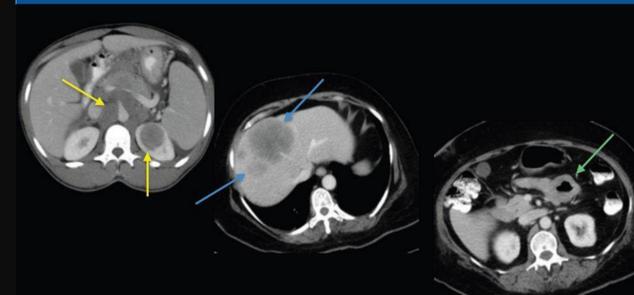
Axial CECT scan through the pelvis demonstrates **multiple subcutaneous exophytic soft tissue lesions**. These findings are consistent with subcutaneous lymphomatous involvement.

## CASE 4



Axial CT scan in bone window demonstrates **multiple cortically based lytic lesions** of varying sizes in the vertebral bodies. Additional Sagittal MRI scan demonstrates pathologic compression fracture with fatty bone marrow replacement with leukemic cells.

## CASE 5



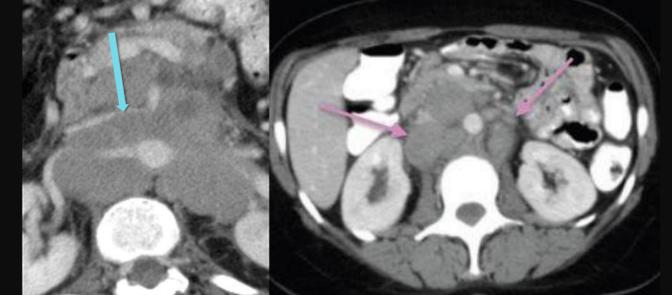
Axial CECT scans through the abdomen in three separate patients demonstrate the presence of a **solid enhancing lesion in the left kidney with extensive retroperitoneal lymphadenopathy**, a **dominant enhancing hepatic mass with small satellite lesions** and a **cavitary small bowel mass** indicative of underlying lymphoma.

## CASE 6



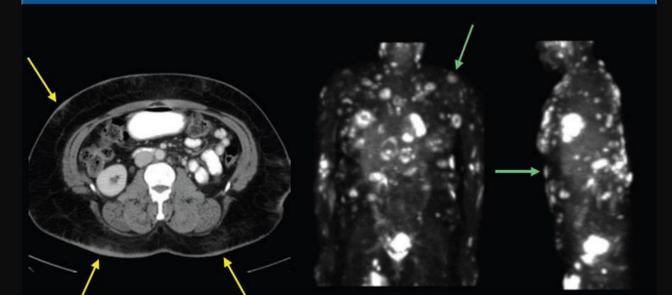
Axial CECT scan through the abdomen demonstrates **multiple discrete lesions of varying sizes in the hepatic parenchyma, pancreatic tail and renal parenchyma**. These findings are consistent with underlying lymphoma.

## CASE 7



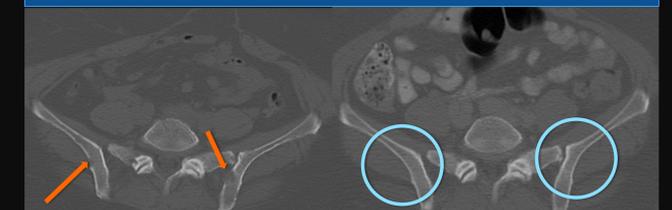
Axial CECT scans through the mid abdomen demonstrates **bulky mesenteric and retroperitoneal adenopathy** encasing the aorta and **narrowing of the mesenteric great vessels**. These findings are consistent with diffuse infiltration of the lymphatic system.

## CASE 8



Axial CECT scan through the mid abdomen demonstrates the presence of **diffuse shallow cutaneous lesions**. Corresponding coronal and sagittal PET scan images demonstrate **disseminated cutaneous lesions** with increased metabolic activity consistent with diffuse lymphomatous involvement.

## CASE 9



Axial CT scan in bone window demonstrates **multiple cortically based lytic lesions** of varying sizes in the pelvis. Resolution of osseous lesions is seen after chemotherapy.

## REFERENCES

1. George CD et al. The Radiological Features of Adult T-cell Leukemia/Lymphoma. Clinical Radiology 1994; 49:83-88.
2. Okada F et al. Thoracic CT Findings of Adult T-Cell Leukemia or Lymphoma. AJR 2004; 182:761-767.
3. Tanosaki R et al. Adult T-cell Leukemia-Lymphoma: Current Treatment Strategies and Novel Immunological Approaches. Expert Review of Hematology 2010; 3(6):743-753.