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GREAT CASES:

CLINICAL, RADIOLOGIC AND PATHOLOGIC CORRELATIONS BY MASTER PHYSICIANS

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CLINICAL, RADIOLOGIC & PATHOLOGIC CORRELATIONS BY MASTER PHYSICIANS

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Jeffrey L. Myers, MD, Ann Arbor, MI

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Case 1

THIS WHEEZE IS A TEASE

Dina Khateeb, DO, New York, NY

70-year-old man presented with progressive dyspnea, wheezing, and productive cough for three days. He is a former smoker with hypertension, COPD, severe persistent eosinophilic asthma, and allergic bronchopulmonary aspergillosis. Two weeks prior to this presentation, he was started on Benralizumab therapy. He has no travel history other than moving to the northeastern US from Puerto Rico 30 years ago. His exam was significant for diffuse wheezing on auscultation. CBC with differential and complete metabolic panel were unremarkable. A chest radiograph was obtained on admission(Figure 1).

He was admitted to the hospital and started on systemic glucocorticoids in addition to nebulized corticosteroids and bronchodilators for asthma exacerbation. Sputum cultures returned positive for Escherichia coli and antibiotics were started. He deteriorated despite these therapies and developed hemoptysis with blood streaked sputum one week into the admission. A high-resolution CT Chest was obtained (Figure 2a and 2b) revealing diffuse bilateral micro-nodular and ground glass opacities.

Questions:

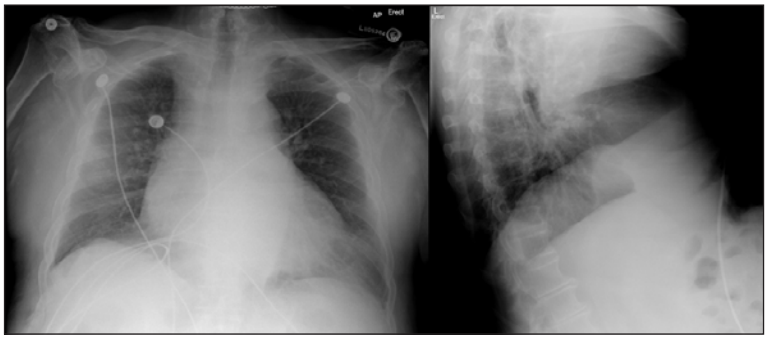
What is your diagnosis?

1. Disseminated Aspergilllosis
2. ABPA Exacerbation
3. Pneumocystis jirovecci pneumonia
4. Strongyloidiasis
5. Mycobacterium tuberculosis

What is the next step in your evaluation?

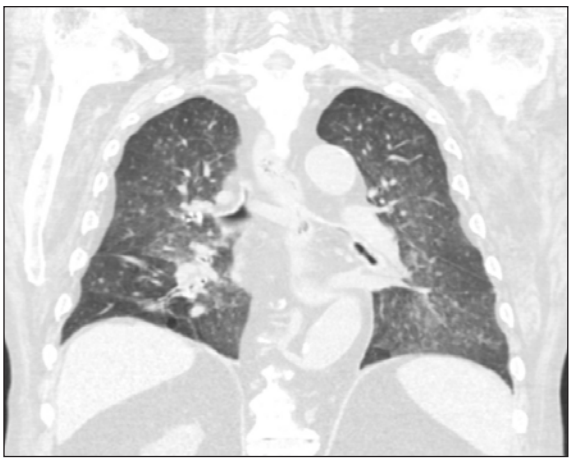
1. Aspergillus Antigen Assay
2. Serum IgE levels
3. Fiberoptic Bronchoscopy with BAL and PCR testing
4. Stool for ova and parasites
5. Sputum Stain and Culture for AFB

Figure 1



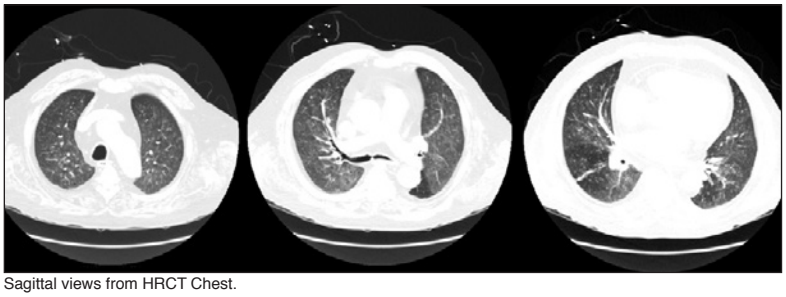
Anteroposteriof and lateral chest radiographs obtained on admission.

Figure 2A



Coronal view on HRCY Chest.

Figure 2B



Sagittal views from HRCT Chest.

Case 2

THIRD TIME'S THE CHARM

Chou Chou, MD, New York, NY

A 58-year-old male with chronic lymphocytic leukemia (CLL) most recently treated with ibrutinib presented with three weeks of dyspnea, productive cough, fatigue, and anorexia. Chest CT revealed innumerable, randomly distributed bilateral pulmonary nodules and masses with areas of confluent consolidation. Initial diagnostic studies were unremarkable including negative sputum direct fluorescent antibody staining, borderline elevated serum beta-D glucan, negative serum galactomannan, and negative Cryptococcus antigen.

The patient underwent bronchoalveolar lavage (BAL), trans-bronchial biopsies, and a CT-guided lung biopsy, all of which were non-diagnostic. Finally, the patient underwent right lower lobe video-assisted thoracoscopic surgery wedge resection which revealed the diagnosis.

Questions:

What is the diagnosis?

1. Lung involvement of CLL
2. Ibrutinib-induced pneumonitis
3. Pneumocystis jirovecci pneumonia
4. Miliary fungal infection

After five weeks of initial treatment, patient was readmitted with persistent dyspnea and increased new nodules on repeat CT imaging. What is the next step in management?

1. Start liposomal amphotericin B
2. Start clindamycin and primaquine
3. Start methylprednisolone
4. Repeat biopsy

Figure 1

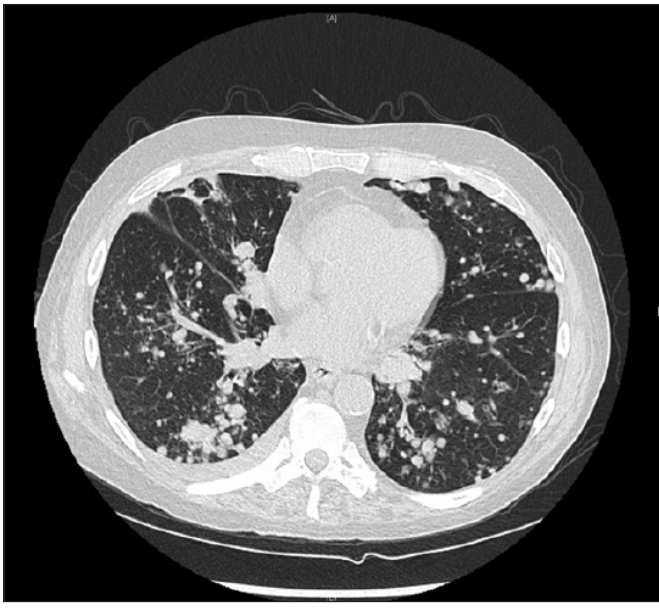
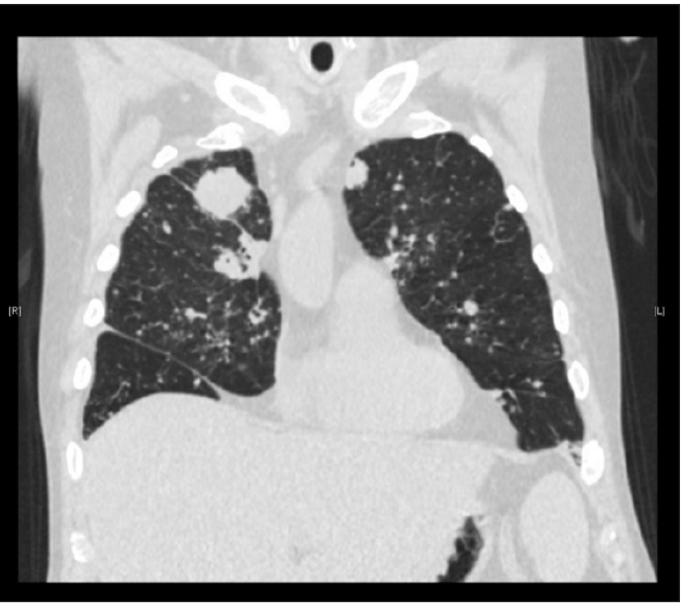


Figure 2



Case 3

THE INDOLENT STORM

Raghav Gattani, MD, Norfolk, VA

A 29-year-old African American male with a history of untreated HIV/AIDS presented to the hospital with dyspnea. On initial presentation, he was in dire respiratory distress and was intubated. He was found to have a CD4 count of 25 with a viral load of 1,060,000. Other notable labs included a hematocrit of 28%, platelet count of 82 K/ul, CRP 11.3 mg/dl and ESR >120 mm/hr. CT chest (Image A, B) demonstrated diffuse bilateral alveolar opacities with septal and central peri-bronchovascular interstitial thickening along with bilateral pleural effusions and generalized body wall edema.

An extensive infectious workup including a bronchoscopy with lavage was done which was unremarkable. Given the lack of clinical improvement with broad-spectrum antibiotics and unclear etiology of pulmonary infiltrates, a repeat bronchoscopy with transbronchial biopsy was performed.

Questions:

What is your diagnosis?

1. Immune reconstitution inflammatory syndrome
2. Kaposi Sarcoma Inflammatory Cytokine Syndrome
3. HHV-8 associated Castleman Disease
4. Primary Effusion Lymphoma

What is the treatment of choice?

1. Glucocorticoids
2. Antiretroviral therapy
3. Antiretroviral therapy + Systemic Chemotherapy
4. VEGF inhibitors (Bevacizumab)

Figure 1

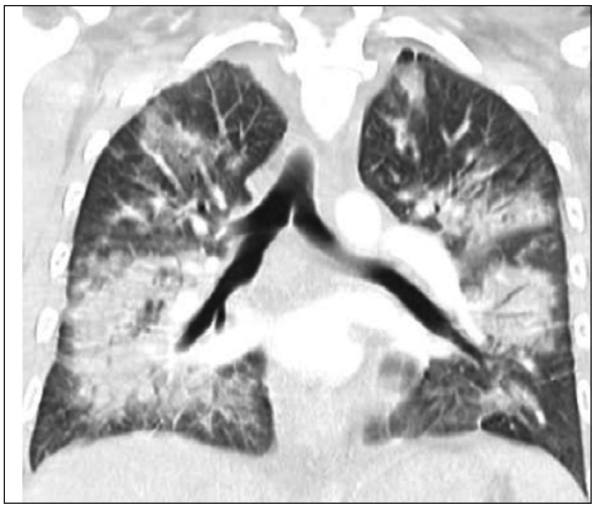
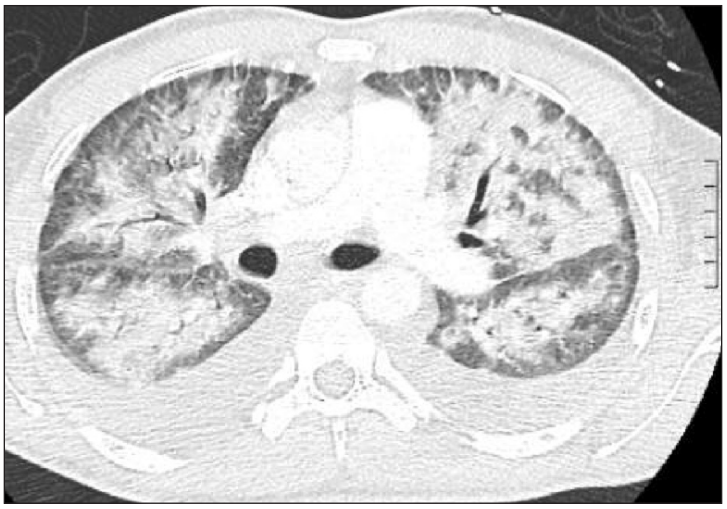


Figure 2



Case 4

BROADENING OUR DIFFERENTIALS...AND OUR HORIZONS

Asad Khan, MD, Springfield, MA

A 26-year-old male who presented to the hospital with a 3-week history of malaise, fevers and drenching night sweats. He worked at a freezer of a wholesale grocery store and began experiencing severe hot flashes which progressively became worse during the two days prior to presentation. The patient also had significant body aches, sweating and profuse diarrhea. He stated that the diarrhea started a few days prior to the rest of his symptoms. He complained of a dry cough and subjective fevers. He also noted a 15-pound unintentional weight loss over the last 3.5 weeks due to a poor appetite. He has a remote history of snorting heroin and cocaine, actively uses electronic cigarettes and has had multiple sexual partners over the last few months. His mother was also recently ill with pneumonia and had recovered fully.

At the hospital, the patient had fevers reaching a maximum of 104 degrees Fahrenheit which appeared in a 6-hour cyclical pattern. Physical exam revealed anterior and posterior chain cervical lymphadenopathy in a lean appearing gentleman and scattered rhonchi on auscultation. A Chest X-ray (Figure 1.) and CT Chest (Figures 2-4.) were obtained. Lab testing showed a leukocytosis, elevated ESR, CRP, mildly elevated LFT, significantly elevated ferritin with negative testing for C. difficile, acute hepatitis and a complete respiratory viral panel.

Questions:

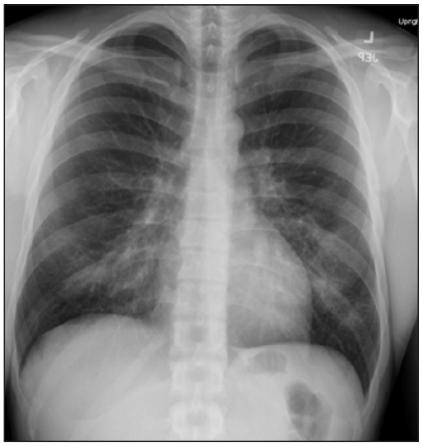
What is your diagnosis?

1. 1.Pneumocystis pneumonia
2. E-cigarette or vaping product use associated lung injury (EVALI)
3. Hypersensitivity Pneumonitis
4. Granulomatous–lymphocytic interstitial lung disease (GLILD)
5. Community Acquired Pneumonia

What is the next best step in management?

1. Empiric treatment for Pneumocystis Pneumonia
2. Video-assisted thoracoscopic surgery (VATS)
3. Bronchoscopy with transbronchial biopsy of lung parenchyma
4. Empiric treatment with 1mg/kg corticosteroid with follow-up CT Chest
5. Empiric treatment with broad spectrum antibiotics

Figure 1



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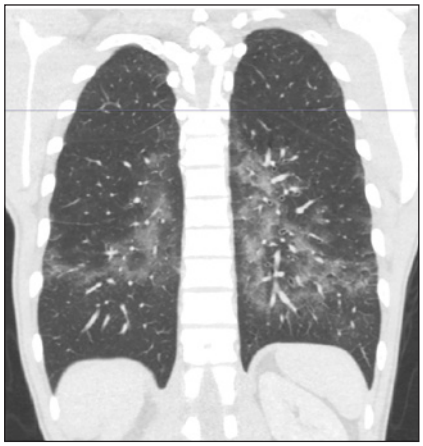


Figure 3

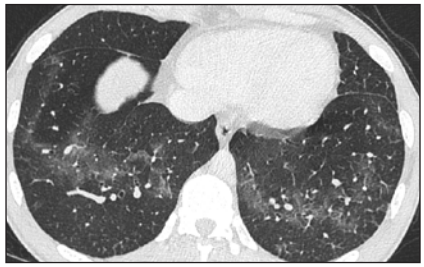
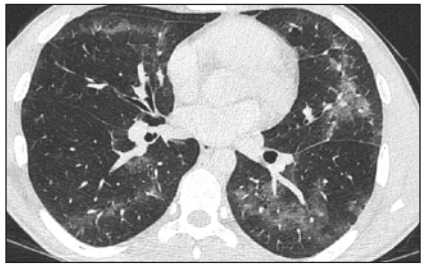


Figure 4



Case 5

CAVITARY CONUNDRUM

Michael G. Lester, MD, Nashville, TN

A 31-year-old woman presented with one month of intermittently productive cough, fevers, fatigue, and chest discomfort. Chest imaging revealed a large left upper lobe cavitary mass. Bronchoscopy with BAL was not diagnostic. She was treated empirically with augmentin for one month with interval enlargement of the cavitary mass and development of new bilateral nodules. Over the next three months, extensive additional evaluation was unrevealing, including second bronchoscopy with BAL and transbronchial biopsies, CT-guided core needle biopsy, and ultimately surgical lung biopsy. All cultures were negative and pathological specimens consisted of nonspecific inflammatory changes without granulomas or malignancy and negative stains for atypical organisms. Histoplasma antigen and serologies, 1,3-beta-D-glucan, MTB PCR on bronchoscopic specimens, ANCA, and ANA also returned negative. Interval chest CT again demonstrated progression of the LUL mass now involving the anterior mediastinum and larger, now-cavitary bilateral nodules.

She presented to our facility for a second opinion. She complained of ongoing dry cough, unintentional weight loss, night sweats, dyspnea on exertion, pleuritic left-sided pain, and fatigue with impairment in her ability to care for her young child. Physical exam revealed clear breath sounds throughout with normal work of breathing on room air, no appreciable lymphadenopathy, and no evidence of clubbing or other focal changes.

Questions:

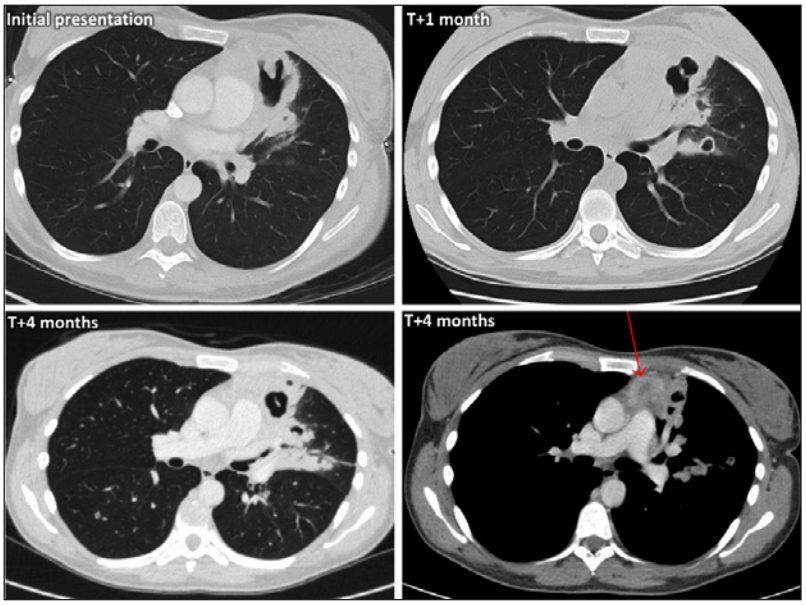
What is your diagnosis?

1. Lymphoma
2. Blastomycosis
3. Pulmonary tuberculosis
4. Pulmonary nocardiosis
5. IgG-4-related disease

Which of the following diagnostic procedures would you perform next?

1. Repeat bronchoscopy with targeted / advanced guidance
2. Repeat transthoracic needle biopsy
3. Diagnostic left upper lobectomy
4. Anterior mediastinotomy / Chamberlain procedure
5. Additional serologic workup

Figure 1



Case 6

THE UNUSUAL SUSPECTS

Safeer Shah, MD, Maywood, IL

A 66-year-old female with a past medical history of asthma, diabetes mellitus, GERD, and obesity was referred to our pulmonary clinic for worsening dyspnea. Initially, the patient's symptoms developed concomitantly with forest fires near the patient's home which prompted imaging revealing bilateral haphazardly scattered micronodules and ill-defined ground glass opacities. Patient's review of systems and remaining history were otherwise unremarkable. Physical exam was notable for end inspiratory rales at the left lung base.

Laboratory evaluation including autoimmune serologies, inflammatory markers, and hypersensitivity pneumonitis panel were unrevealing except for a modestly elevated ESR. The patient underwent open lung biopsy with pathology slides below:

Questions:

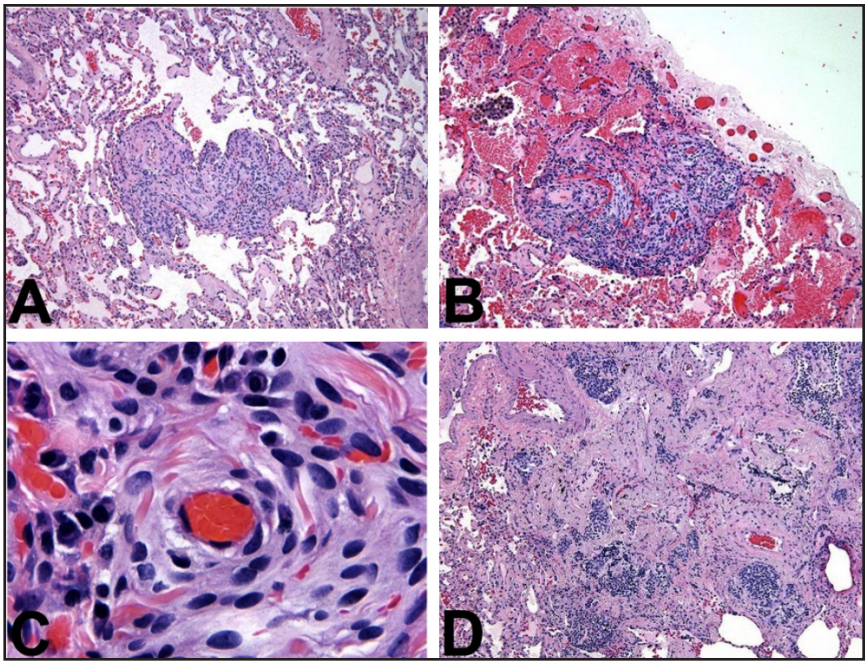
What is your diagnosis?

1. Pulmonary Cryptococcus
2. Diffuse Pulmonary Meningotheliomatosis
3. Hypersensitivity pneumonitis
4. Amyopathic dermatomyositis
5. Chronic Aspiration pneumonia

What is a common associated diagnosis?

1. Malignancy
2. Vasculitis
3. Ulcerative Colitis
4. Infective Endocarditis

Figure 1



Case 7

HALF OF THE STORY

Dionne Adair, MBBS, Ann Arbor, MI

A 4-month old full term male presented for evaluation of a chronic wet cough that began at 2 months of age. He required non-invasive positive pressure ventilation for 24 hours after birth. Family history included an older sibling with cystic fibrosis (CF). The patient's newborn screen for CF and sweat chloride were normal. He had been growing well without signs of malabsorption. A chest x-ray showed unilateral right-sided reticular opacities (Figure 1). Over about 18 months, he underwent extensive evaluation. Echocardiogram was normal. Video fluoroscopic swallowing exam was normal. Flexible fiberoptic bronchoscopy revealed small, edematous airways. The bronchoalveolar lavage fluid contained predominantly histiocytes with no growth on respiratory cultures and normal Oil Red O stain. Respiratory mucosal biopsy showed normal ciliary ultrastructure by transmission electron microscopy. CT imaging of the chest identified persistent unilateral findings (Figure 2).

Despite inhaled steroids, bronchodilators, and aggressive airway clearance, the patient continued to have chronic cough. An oropharyngeal swab culture isolated Pseudomonas aeruginosa. With intermittent periods of respiratory deterioration, he required hospitalization for antimicrobial therapy, which resolved his acute symptoms. Due to persistent symptoms without clear etiology, he underwent thoracoscopic lung biopsy

Questions:

What is your diagnosis?

1. Cystic Fibrosis
2. Pulmonary Vein Stenosis
3. Congenital Pulmonary Lymphangiectasia
4. Primary Cililary dyskinesia
5. Disorder of surfactant dysfunction

What therapeutic strategy is proven to work for this disorder?

1. Aggressive daily airway clearance
2. Inhaled corticosteroids
3. Chronic azithromycin therapy
4. None

Figure 1

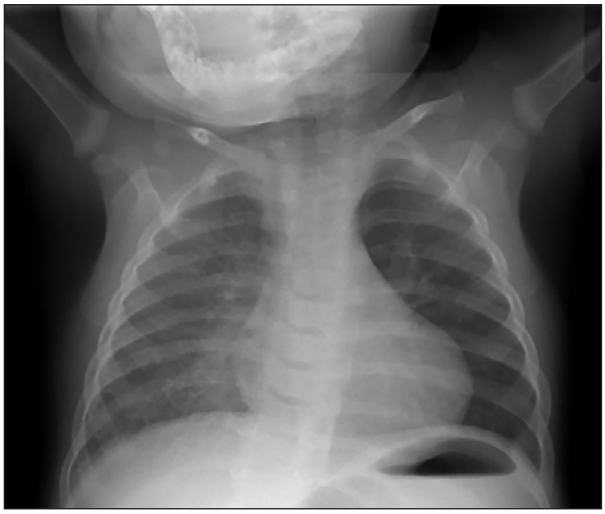
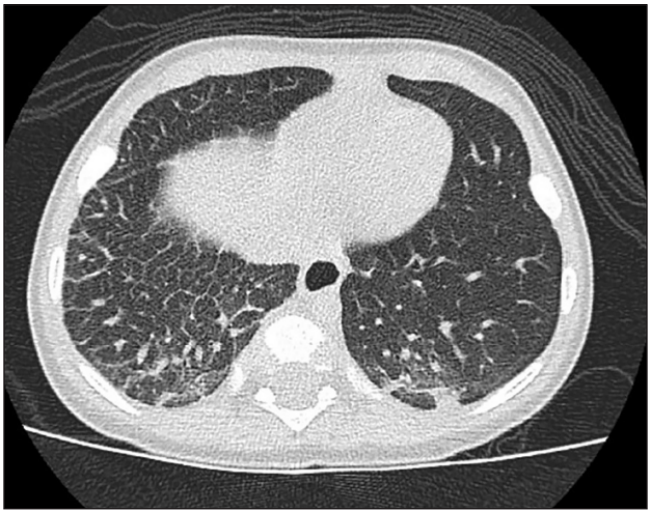


Figure 2



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