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internal medicine

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**HYDATID CYST**

# Hydatidosis

- is the commonest parasitic lung disease worldwide
- Human infection follows ingestion of parasite eggs, with the adult worm found in dogs, sheep, goats, horses, camels, and moose



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- infection is common in **sheep-raising regions**, particularly Central Europe and the Mediterranean, as well as Alaska and Arctic Canada

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- The liver is the most common organ to be involved in adults (75%)
  - followed by the lungs (15%)
  - while in the pediatric population, the lungs are the most common site of involvement

- **Haliloglu M**, Saatci I, Akhan O, Ozmen MN, Besim A. Spectrum of imaging findings in pediatric hydatid disease. *AJR Am J Roentgenol* 1997; **169**: 1627-1631]
- **Solak H**, Yeniterzi M, Yüksek T, Anil N, Göktoğan T, Ceran S. The hydatid cyst of the lung in children and results of surgical treatment. *Thorac Cardiovasc Surg* 1990; **38**: 45-47

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- Many infections are acquired in childhood but do not cause clinical manifestations until adulthood.
  - Latent periods of more than 50 years before symptoms arise have been reported.
  - While approximately **50 percent of detected cases occur in asymptomatic patients**, many more cases remain undiagnosed or are found incidentally at autopsy.

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- The clinical presentation of *E. granulosus* infection depends upon **the site of the cysts and their size.**
  - Small and/or calcified cysts may remain asymptomatic indefinitely.
  - However, symptoms due to **mass effect** within organs, **obstruction of blood or lymphatic flow**, or **complications** such as rupture or secondary bacterial infections can result.

# Liver involvement

- *E. granulosus* infection of the liver **frequently produces no symptoms.**
- The right lobe is affected in 60 to 85 percent of cases.
- Significant symptoms are unusual before the cyst has reached at least 10 cm in diameter.
- If the cysts become large, **hepatomegaly** with or without associated right upper quadrant pain, nausea, and vomiting can result

# Liver involvement

- *E. granulosus* cysts can rupture into the **biliary tree and produce biliary colic, obstructive jaundice, cholangitis, or pancreatitis.**
- Liver cysts can also rupture into the peritoneum, causing peritonitis, or transdiaphragmatically into the pleural space or bronchial tree, causing pulmonary hydatidosis or a bronchial fistula.
- Secondary bacterial infection of the cysts can result in **liver abscesses.**

# Lung involvement

The lungs are the second-most common site for hydatid cysts in adults.

- The **lower lobes are the most common location** in the lungs (in 60% of cases)
- with the right being more common.
- 30% of cases there is more than one cyst
- bilateral in 20% of cases.
- X-ray and (CT) are the usual imaging modalities used.
- Ultrasound can be beneficial in peripheral lesions and to assess pleura.

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- The most common symptoms of pulmonary cystic echinococcosis (CE) described in the literature include
  - **cough** (53 to 62 percent)
  - **chest pain** (49 to 91 percent)
  - **dyspnea** (10 to 70 percent)
  - **hemoptysis** (12 to 21 percent)

- Uncomplicated hydatid cysts are usually diagnosed incidentally on chest X-rays.
- Chest pain, dyspnea, dry coughing, and hemoptysis can occur due to **the mass effect** caused by larger cysts.

- **Pedrosa I**, Saiz A, Arrazola J, Ferreirós J, Pedrosa CS. Hydatid disease: radiologic and pathologic features and complications. *Radiographics* 2000; **20**: 795-817 [PMID: 10835129 DOI: 10.1148/ radiographics.20.3.g00mao6795]

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- Acute-onset chest pain, coughing, hemoptysis and anaphylactic reactions may suggest cyst rupture.
  - The expectoration of membranes and hydatid sand is diagnostic of a ruptured hydatid and has been described in **31%-38%** of cases.

# LAB

- Nonspecific leukopenia or thrombocytopenia
- nonspecific liver function abnormalities may be observed but are not diagnostic.
- Eosinophilia is observed in fewer than 15 percent of cases and generally occurs only if there is leakage of antigenic material.



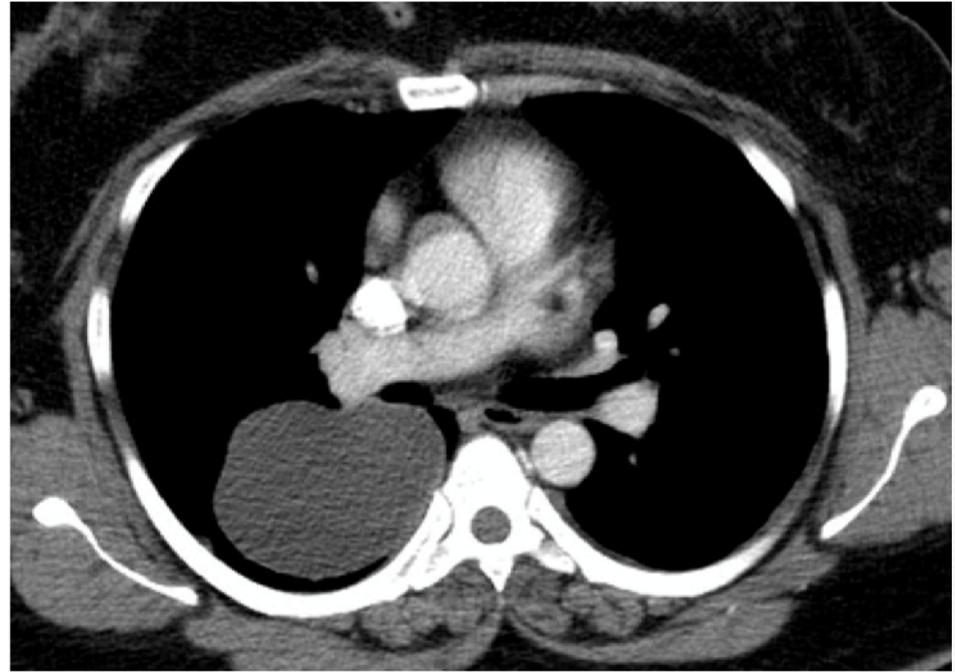
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- An uncomplicated hydatid cyst appears as a well-defined homogenous radio-opacity on a chest X-ray



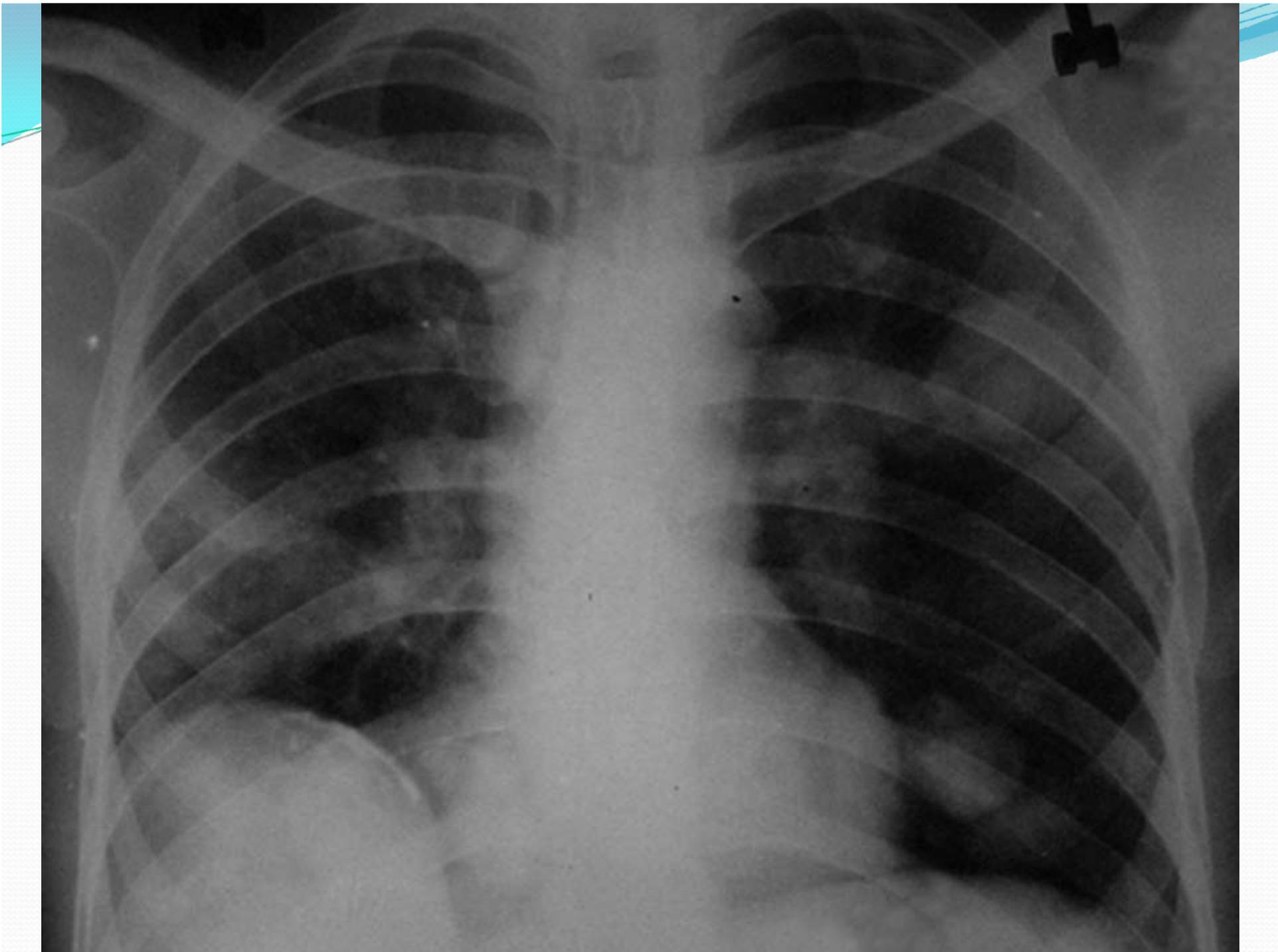


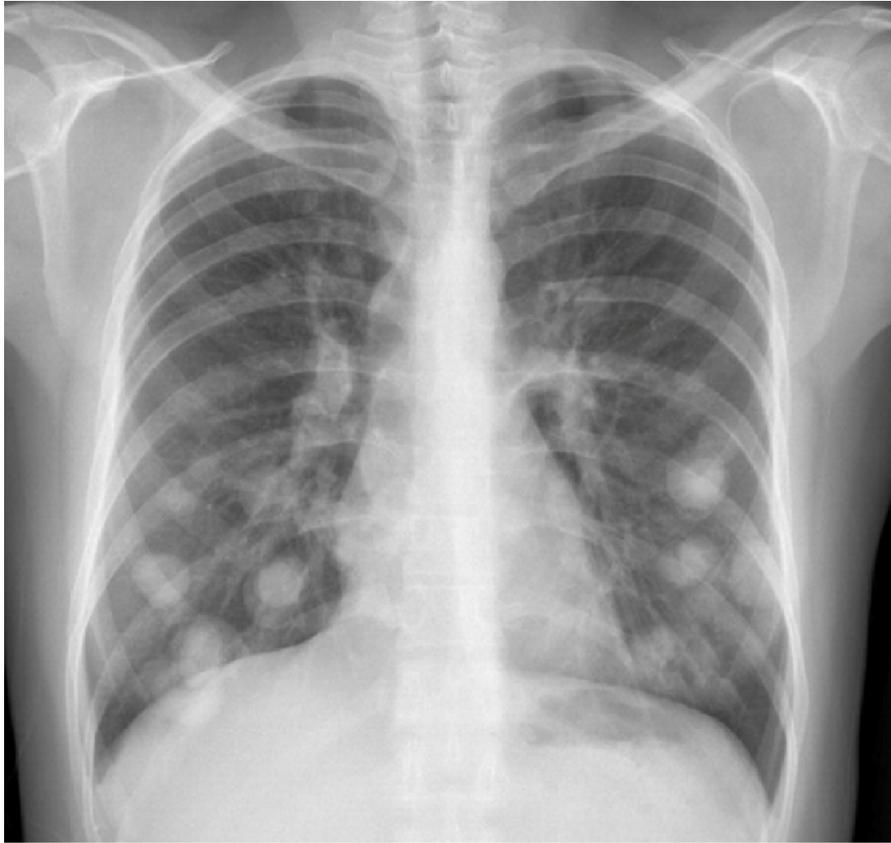


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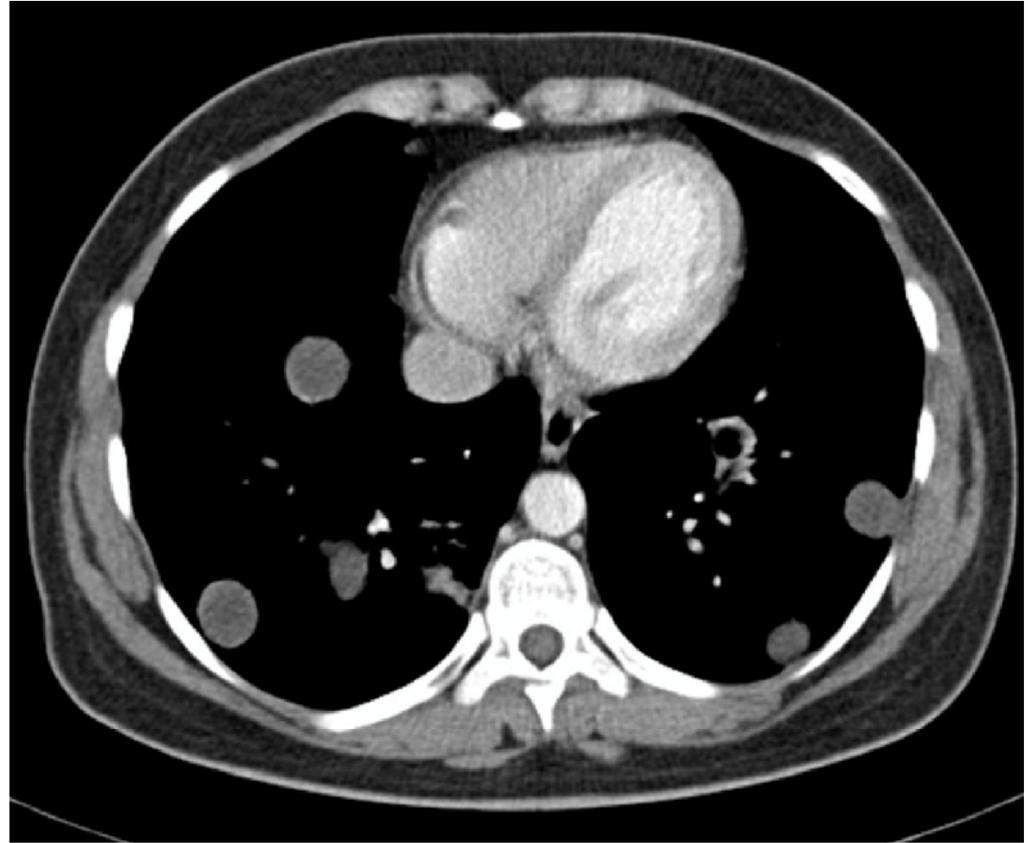


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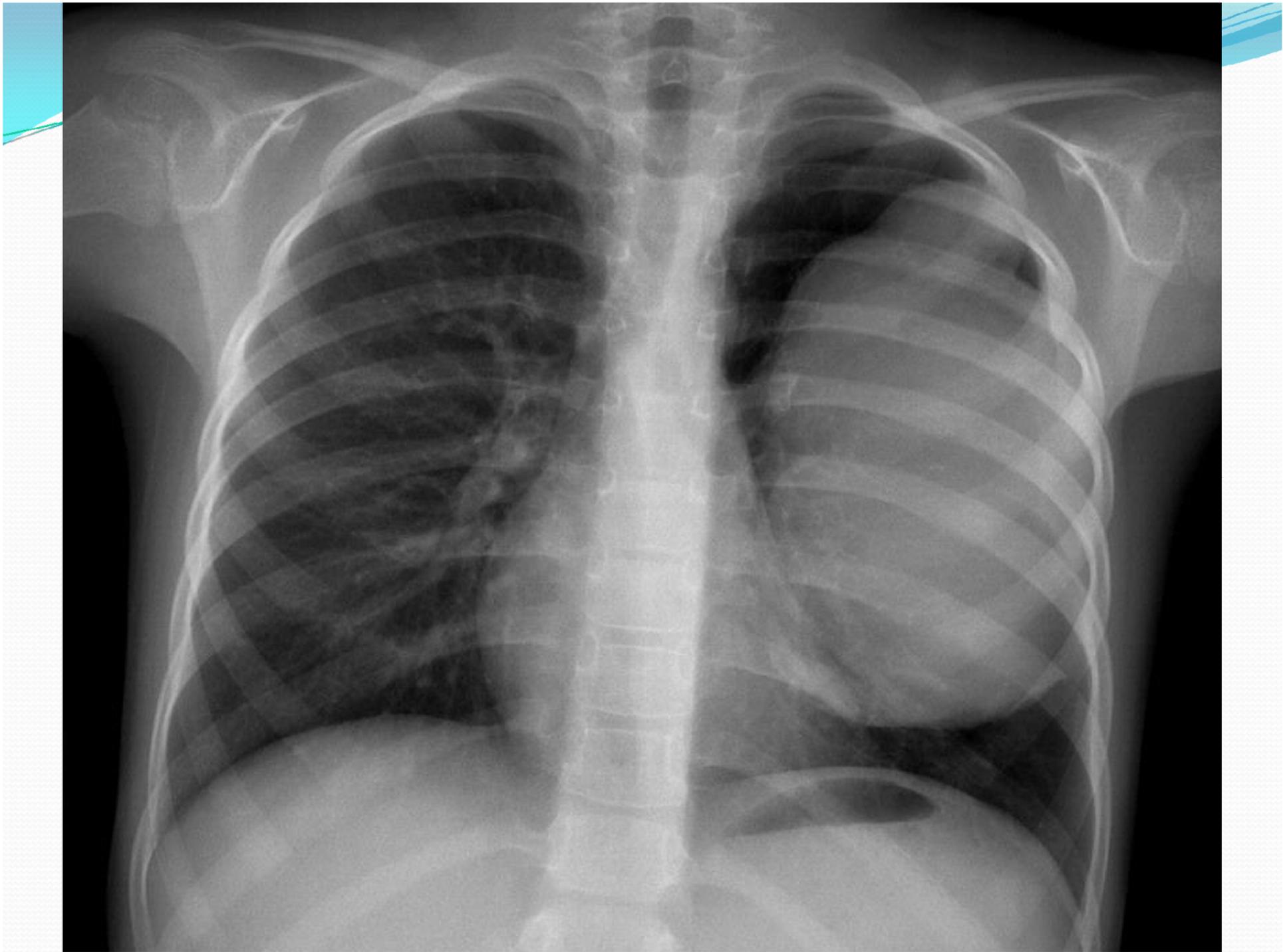




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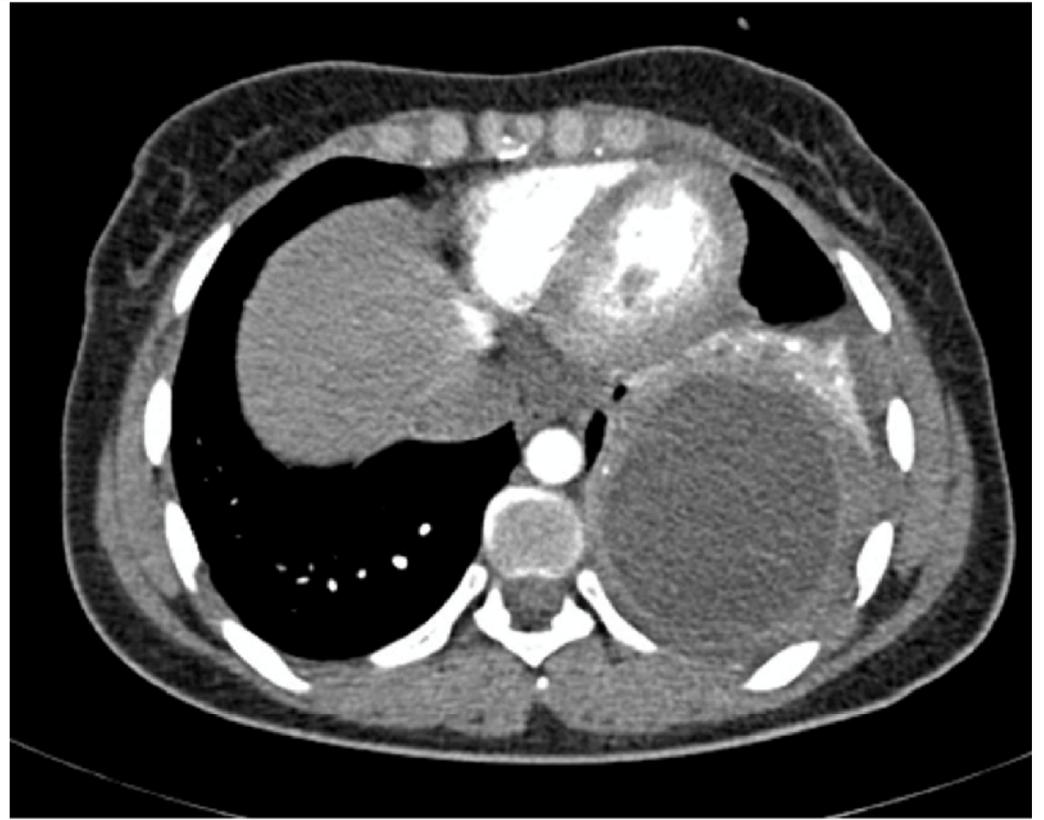


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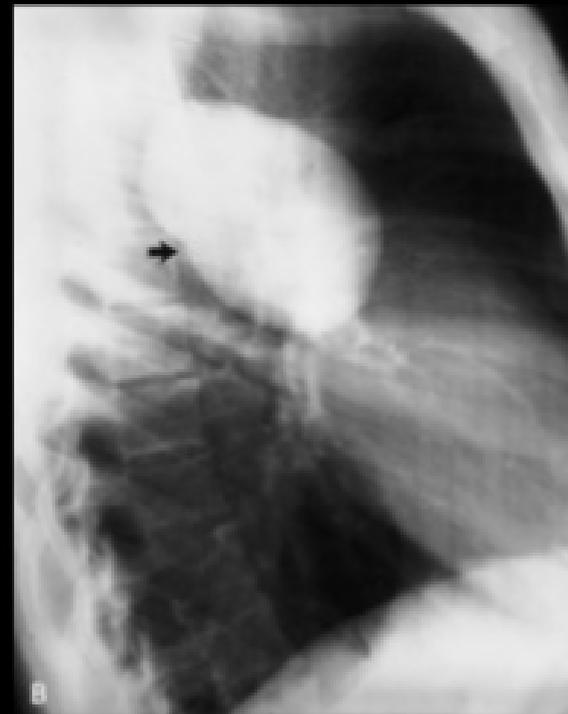




(a)



(b)



- (A and B) PA and lateral views of the chest showing a lobulated, elliptical, homogeneous mass in the right upper lobe. There is umbilication or notching along the medial and posterior borders of this hydatid (arrows) caused by pressure on the cyst from adjacent vessels or bronchi.

# Complicated cyst

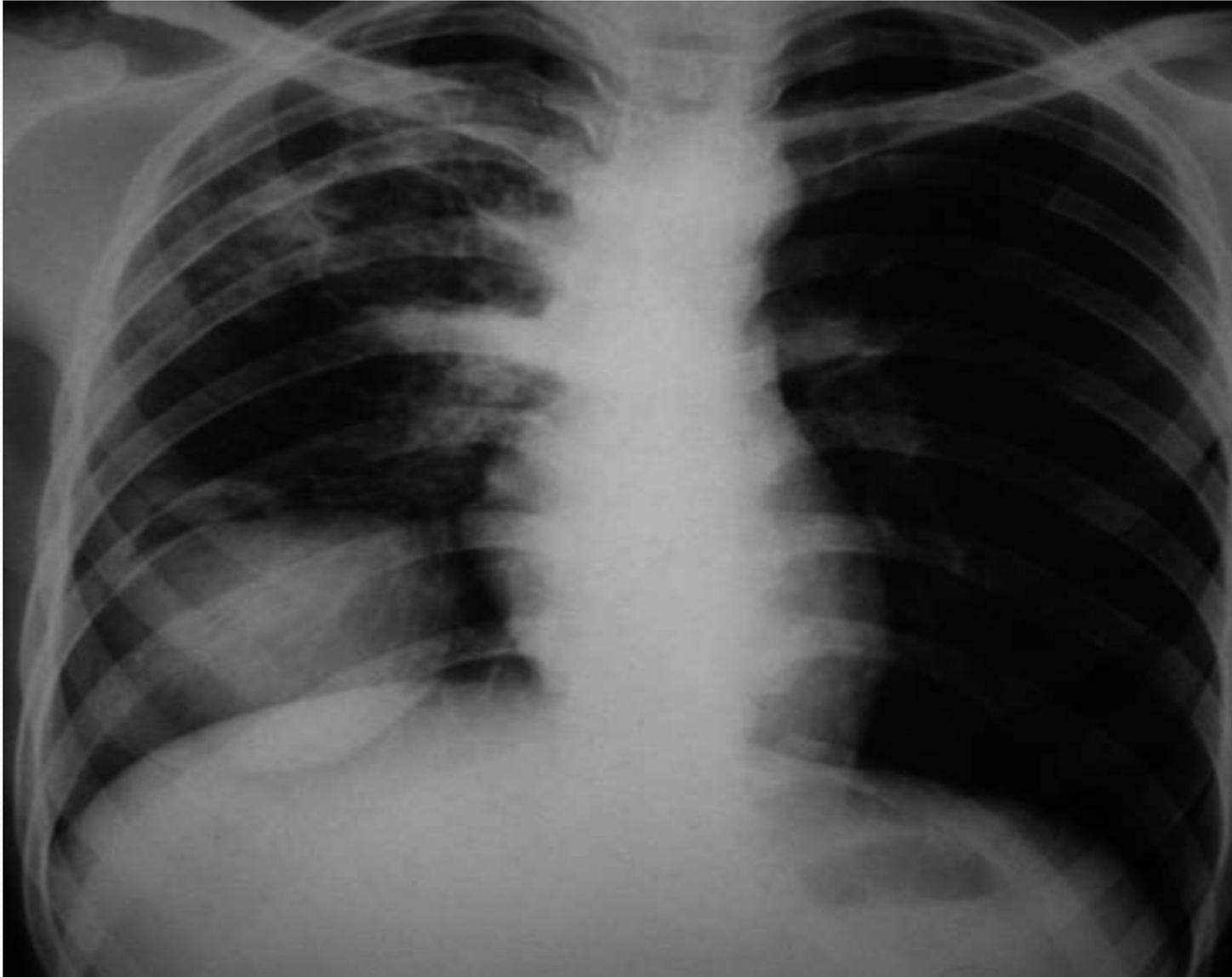
The cyst may rupture spontaneously due to

- trauma
- degeneration by aging
- toxins
- infections
- Chemotherapy
- lack of nutrients may lead to the damage of the cystic wall with an increased risk of rupture.

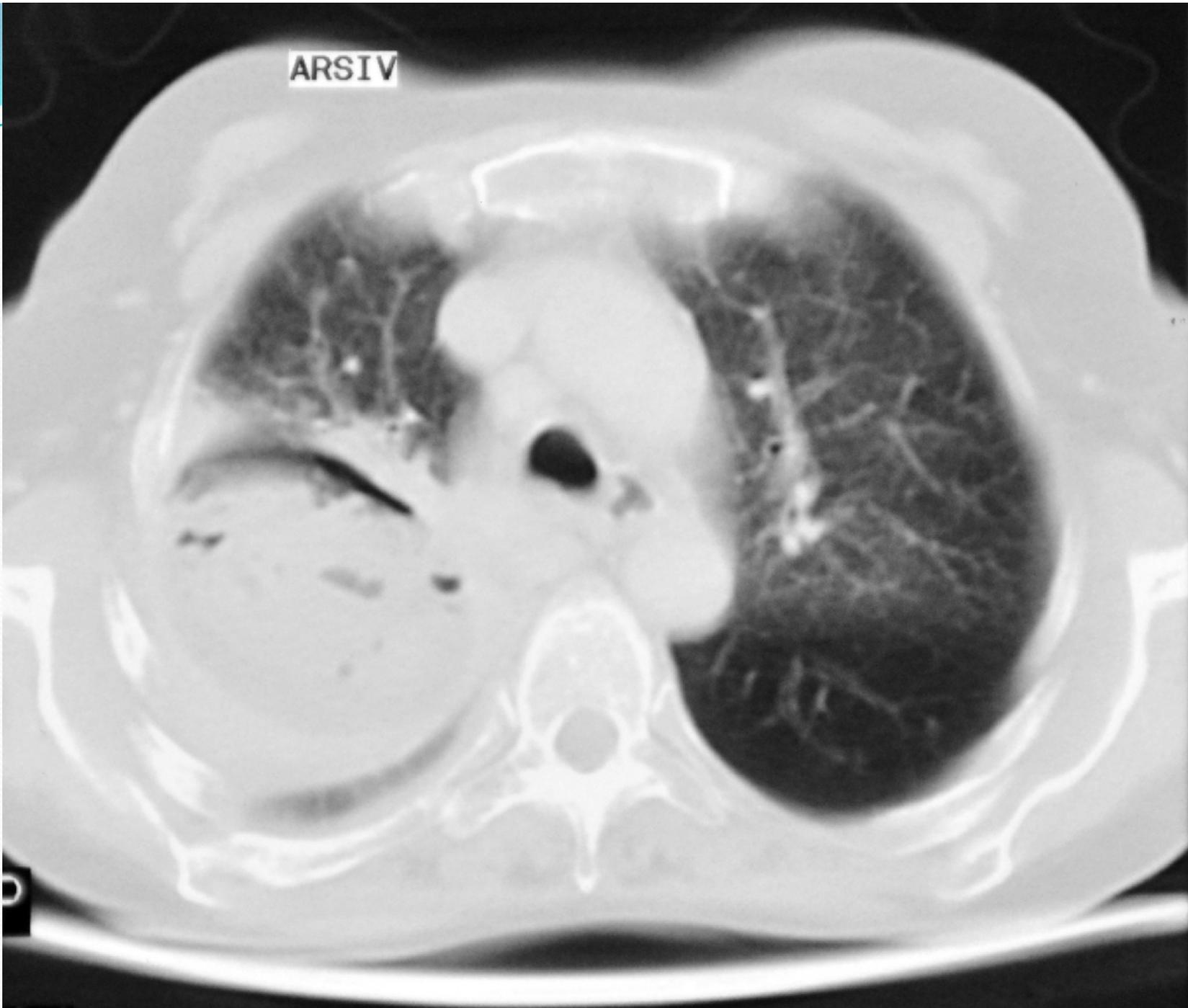
# Complicated cyst

- Crescent sign
- Polycyclic and bilobed appearance Cumbo or double arch sign
- Slot sign (impending rupture)
- Water lily or camelotte sign
- Rising sun sign
- Dry cyst sign

# Air crescent sign:



ARSIV



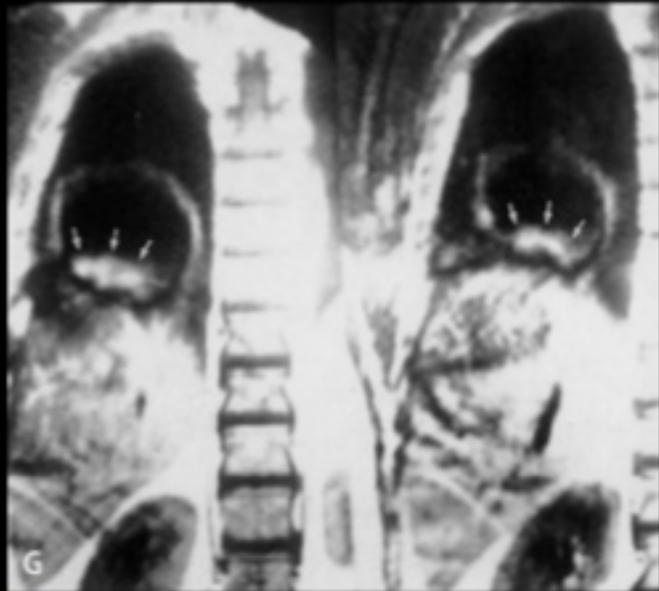
# CUMBO SIGN



# Sign of the rising sun

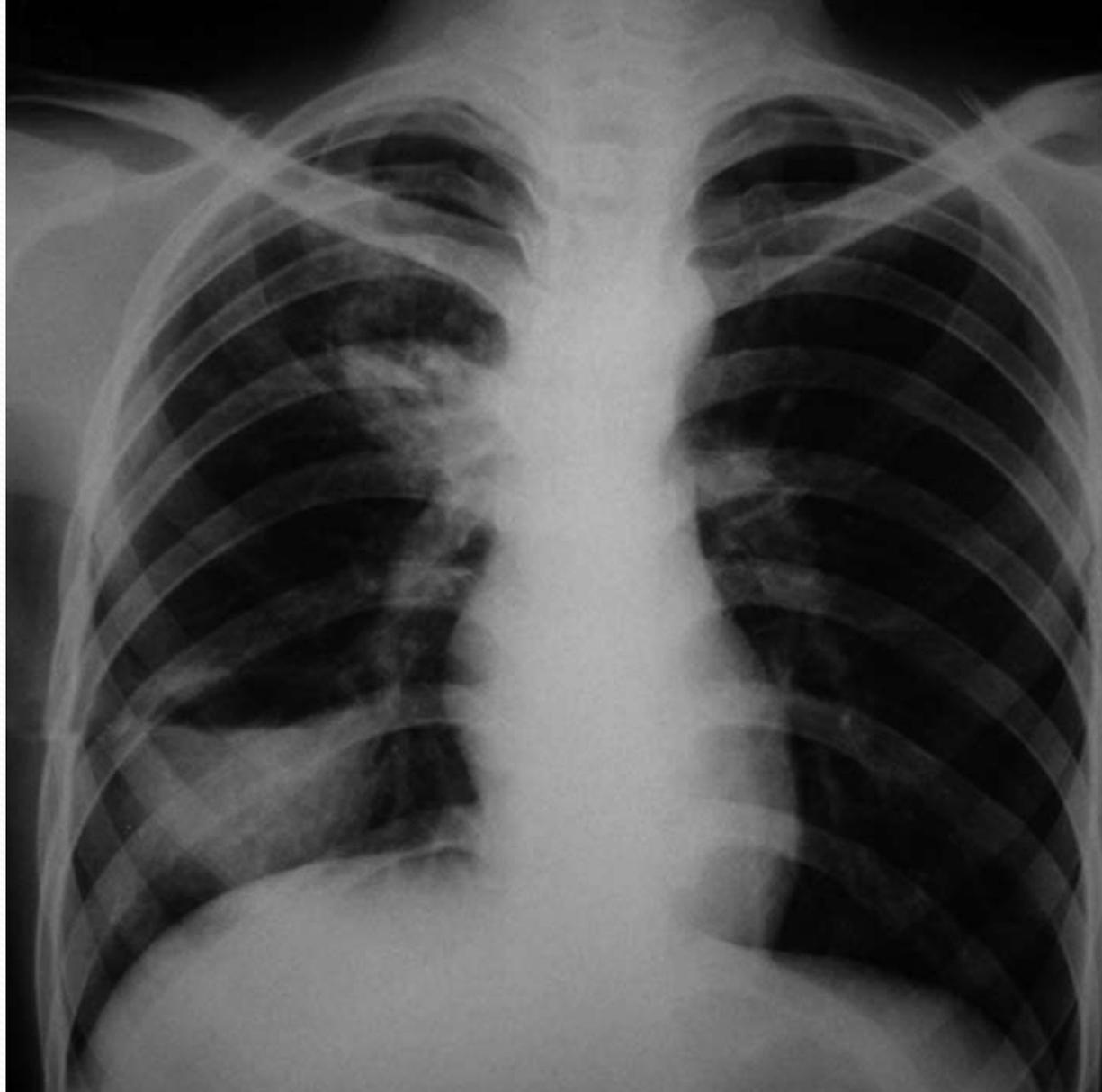


Globular collapsed  
parasitic membranes  
at bottom of the cyst.



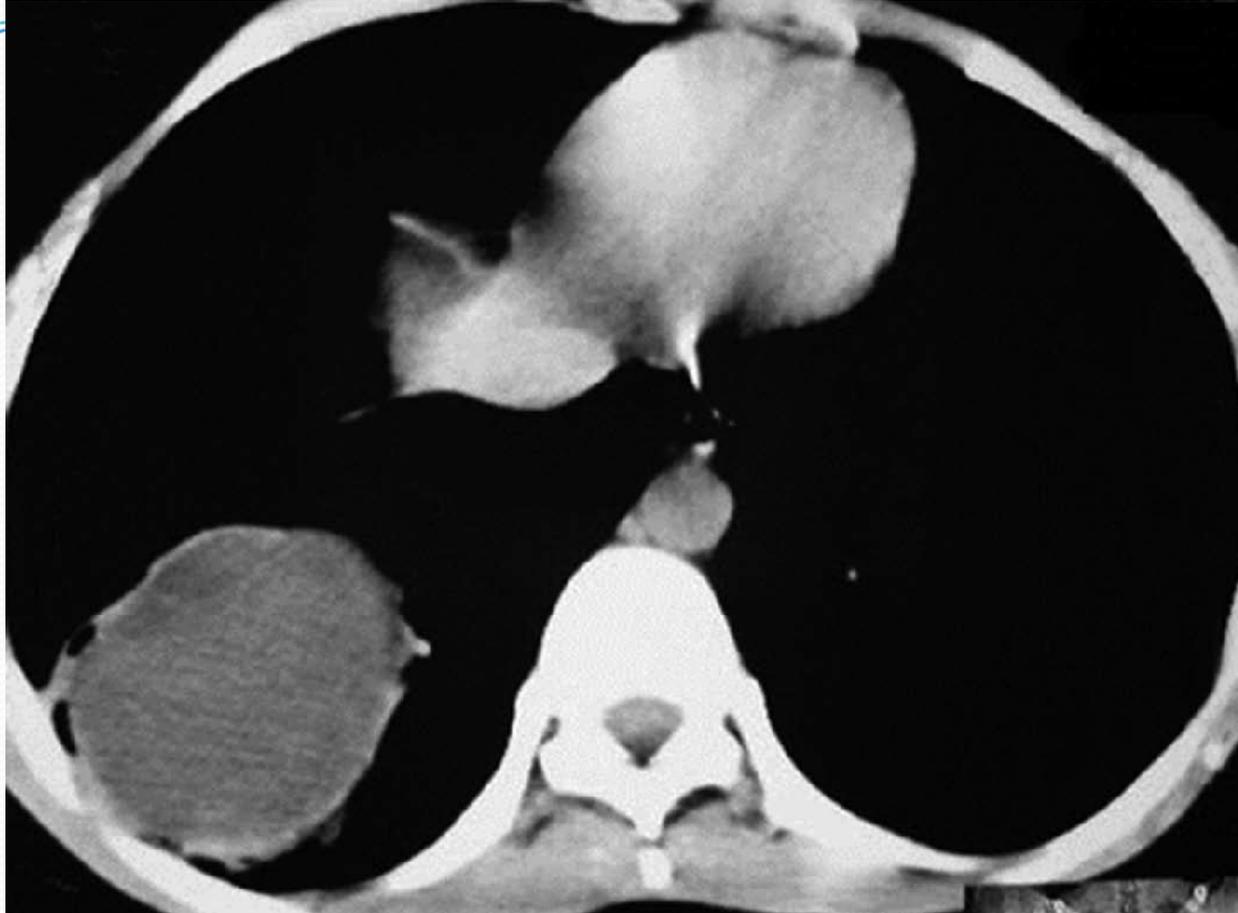
- MRI, coronal view, 1 week later of hydatid cyst rupture reveals globular collapsed parasitic membranes at bottom of the cyst producing the "sign of the rising sun" (*arrows*).
- One month later, CT shows an "empty cyst" after complete evacuation of the parasitic membranes.

# Air fluid level





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well defined cystic lesion with small air foci at periphery of the lesion **(air bubble sign) (arrow)**. Also note presence of mildly thickened wall with contrast enhancement (ring enhancement sign). This was a case of infected hydatid cyst.



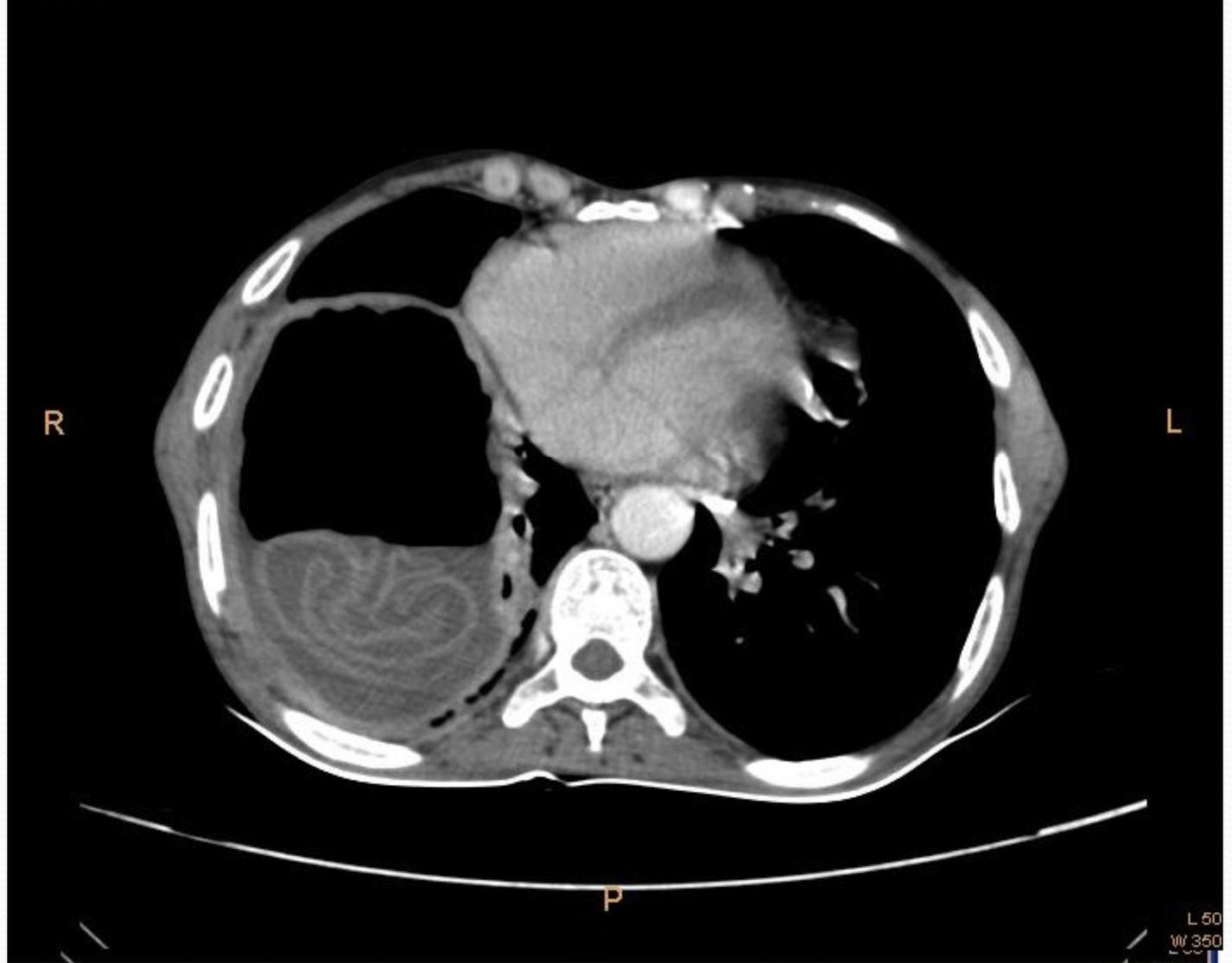
a case of ruptured hydatid cyst showing air and fluid with multiple curvilinear hyperattenuating membranes in dependant part (**whirl sign**).

# serpent sign

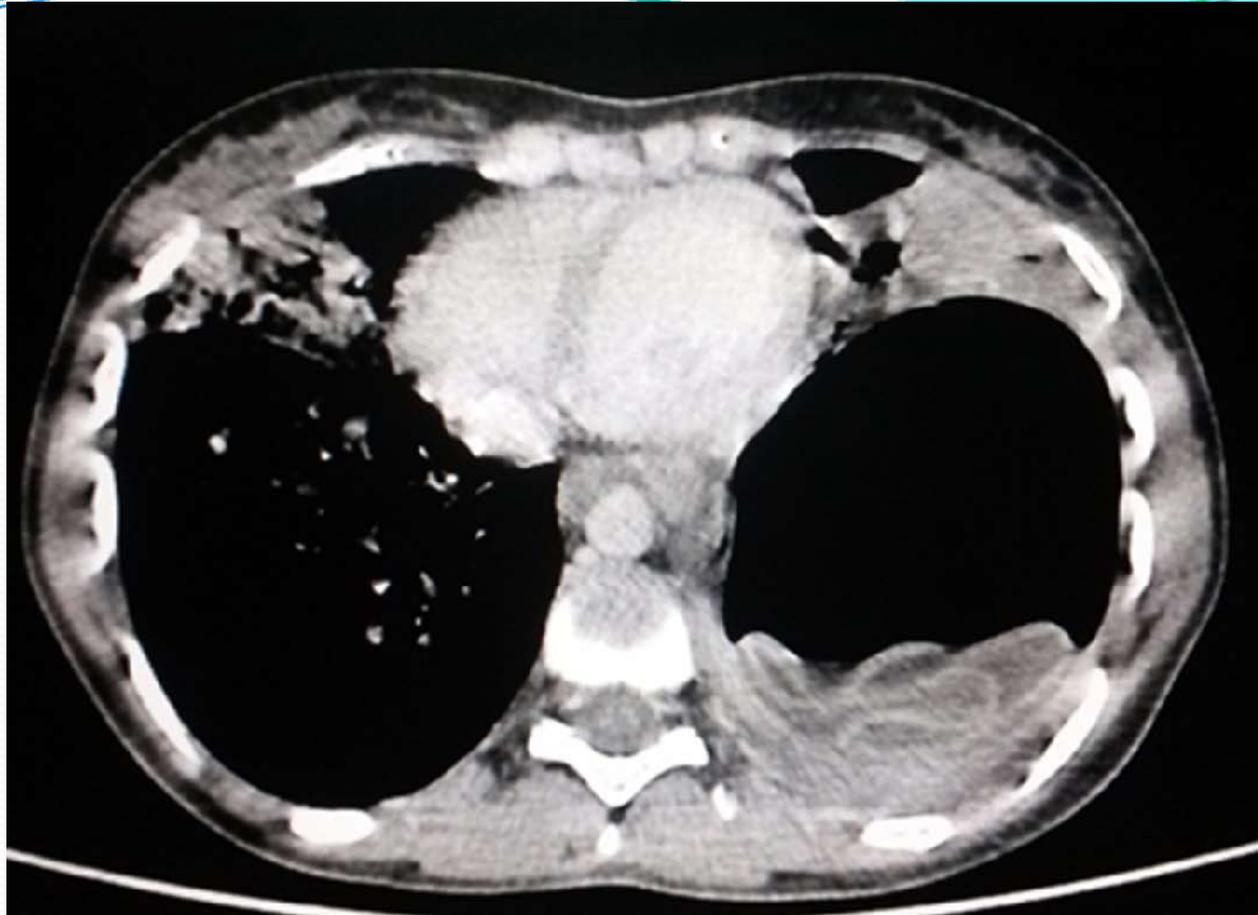


Scan Nr. 0 - Slice 212/404  
Slice pos 204.80

FOV 305 mm  
Slice Thk 2.0mm







## **“Water lily sign”**

a case of ruptured hydatid cyst showing air fluid level with crumpled endocyst appearing as floating membrane at air fluid interface.



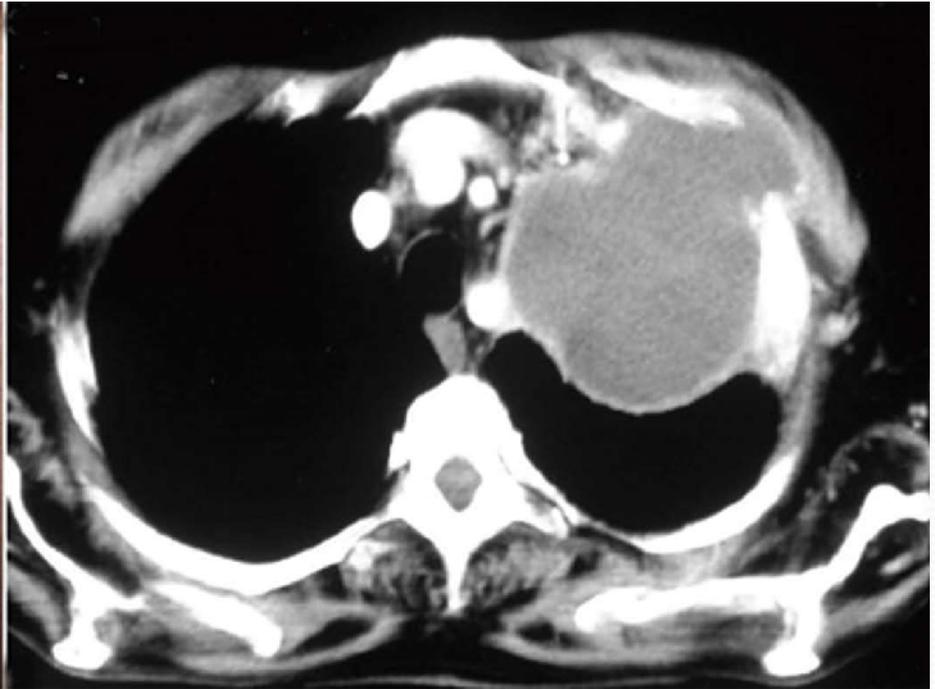


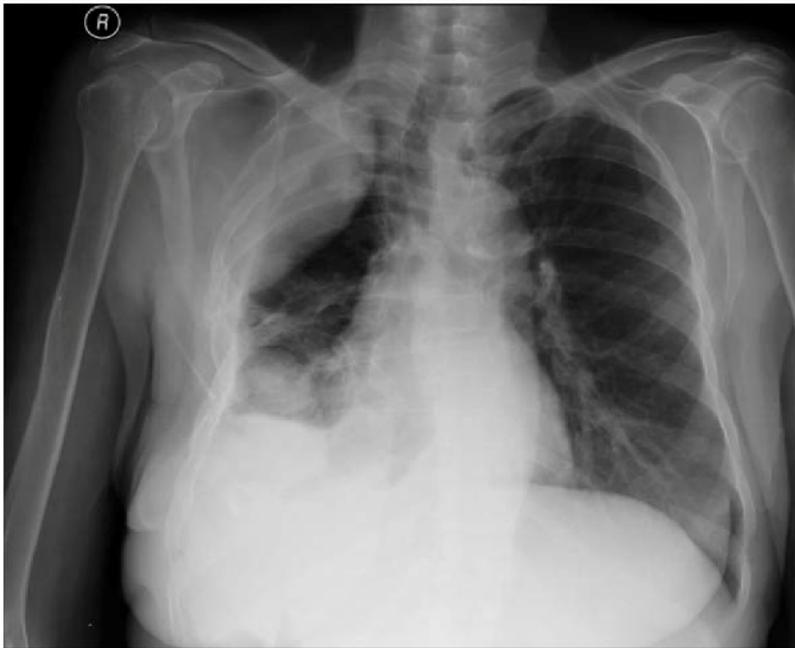
13

0

P

34-48-B





(a)



(b)



# Classical signs of pulmonary hydatid cyst on chest X-ray

Uncomplicated hydatid cyst	Complicated hydatid cyst
Well circumscribed round radio-opacity (resembling canon ball on AP and rugby ball on lateral projection)	Crescent sign
Polycyclic and bilobed appearance	Cumbo or double arch sign
Slot sign (impending rupture)	Water lily or camelotte sign
	Rising sun sign
	Dry cyst sign

# Computed tomography signs described in pulmonary hydatid cyst

## Signs of contained rupture

- Crescent sign
- Air bubble sign

## Signs of cyst rupture

- Cumbo sign
- Water lily sign
- Dry cyst sign

## Signs of cyst infection

- Air bubble sign
- Ring enhancement sign
- Air fluid level



THANK YOU

