Tuberculous Cavities

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## Most frequent etiologies of excavated images

<table>
<thead>
<tr>
<th>Only cavity with thin wall</th>
<th>Only cavity with thick wall</th>
<th>Multiple cavities with thin wall</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Emphysema bulla</td>
<td>-Tuberculosis</td>
<td>bronchiectasis</td>
<td>-Tuberculosis</td>
</tr>
<tr>
<td>Hydatidosis</td>
<td>-Bacterial abcess</td>
<td>-Emphysema bulla</td>
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</tr>
<tr>
<td>Fungal infection</td>
<td>-Bronchial cancer</td>
<td>-Pneumatocele</td>
<td>-Bronchial cancer</td>
</tr>
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<td>Bronchogenic cyst</td>
<td>-Fungal infection (aspergillus)</td>
<td>-Hydatidosis</td>
<td>-Bronchiectasis</td>
</tr>
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<td>Pneumatocele</td>
<td>-Amibiasis</td>
<td>-Septic embolism</td>
<td>-Metastasis</td>
</tr>
<tr>
<td>Hiatal hernia</td>
<td></td>
<td>-Pneumocystosis (sequela)</td>
<td>-Fungal infection</td>
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</tbody>
</table>
The tuberculous cavern

This is a picture of an abcess

- Round pattern
- Variable size
- Thick and irregular wall
- Generally in the superior lobes or apical segment of inferior lobe
- Most often without fluid level
- Sometimes a draining bronchus is visible

+++ the TB cavern is, most often, associated with nodular, alveolar lesions or others caverns
+++: AFB++ in the direct examination of sputum
Male, 25 years old, cough, fever and weight loss, hemoptysis, AFB+ in sputum.

After 6 months of TB treatment
Woman, 25 years old, fever and cough for 3 weeks. AFB+ in sputum.
Notice, close to the cavern the infiltrate and the nodules: The association is very indicative of TB
Man, 20 years old
Cough, hemoptysis, 8 Kg weight loss
**right**: nodules, caverns, infiltrate

**left**: 2 caverns with draining bronchus

AFB+++ in sputum
Man, 70 years old
Cough, t°, asthenia, Fever, and weight loss

Right nodular opacities, small left axillar cavity

AFB++
Right side: infiltrate
Left side: excavated nodule
Tuberculous Cavern
Notice the draining bronchus and the right axillary infiltrate
Woman 35 years old. Fever and asthenia with sweat and weight loss.

No respiratory signs. Biological inflammatory syndrome

AFB++ in bronchial aspiration (endoscopy)
Young woman, 24 years old. Cough and fever. Notion of TB in her brother 4 years ago. AFB positif in sputum.
TDM: cavity associated with younger lesions: nodules and infiltrates. (but TDM is useless for diagnosis, because AFB +++ in sputum)
• Tuberculous cavities are generally easily diagnosed by the bacteriological examination of the sputum because the caverns are very rich in bacilli (AFB+++).

• But one must be careful in cases of bad quality sputum (saliva) or a too weak patient unable to produce sputum coming from bronchi.

• A hidden or poorly adapted TB treatment is likely to involve a false negative.
• In return, a tuberculous cavity is very rare in cases of a round, non-excavated picture if the diameter is bigger than 3 cms.

• Above this diameter, (and even well before), the tuberculous nodule becomes excavated because of the central necrosis.
This is **not** tuberculosis. The most likely diagnosis is bronchial cancer (notice the destruction of the posterior arch of the 3rd rib )
This is **not** tuberculosis. The most likely diagnosis is bronchial cancer (no excavation)
But all cavities are not tuberculous ...
Man, 52 years old, heavy smoker, asthenia and weight loss, t° 38°C, cough, purulent sputum and hemoptysis

Pulmonary abcess? Excavated cancer? TB cavern?

AFB+++
AFB+

The excavated lesion associated with posterior infiltrate is very indicative of TB.

But this TDM is useless for the diagnosis which has been established by the bacteriological examination.
Man, 60 years old, heavy smoker, AEG, t° 38°C, cough, expectoration, crachats hémoptoïques

Pulmonary abcess? Excavated cancer? TB cavern? AFB++
AFB++

Brochial fibroscopy: bourgeon tumoral lobaire superior right
Scanner: excavated tumour and & mediastinal ganglionnaire extension

Excavated cancer
Excavated cancer
Man, 75 years old, heavy smoker, AEG and cough, pain in right shoulder. BAAR negative after examination of sputum. TB? Cancer?
EXCAVATED CANCER
(spontaneous evolution 1 year later)
Excavated malignant tumor

- Central necrosis of a bronchial cancer
- Sometimes associated with mediastinal tumoral adenopathies
- Clean external limit, intern irregular limit
- Never a draining bronchus
- Frequent Smoker
- **BK consistently negative in sputum.**
Man, 50 years old, alcoholism and smoking
AEG, t° 40°C, cough, purulent sputum
TB? Cancer? Pulmonary abscess?
AFB negative

Bronchial fibroscopy: pus in the right basal pyramid
Scanner: image of an abscess with smooth walls/à paroi régulière
Favorable evolution with antibiotherapy

Pulmonary abscess
Note the same dimension in the level of liquid in the front-view image and the lateral-view image: the abscess is intra-pulmonary and develops like a sphere.
Pleural or pulmonary opacity?

Pleural: the level of liquid is not the same in the front and lateral views.
AFB negative in sputum. Pulmonary abscess?
Evolution after antibiotic treatment by amoxi + ac clav., at 10 days and at 2 months.
Background of Alcohol-Tobacco, purulent and fetid sputum with fever. Poor bucco-dental condition. AFB negative

Multiple bacterial abscesses. Favorable evolution with antibiotics in 2 weeks
Pulmonary Staphylococ (courtesy of coll. Dr. Anthoine)
Staphylococcus aureus pneumopathy
St. aureus pneumopathy
The pulmonary abcess

- This is a dense homogenous oval-shaped opacity before excavation.
- It may be accompanied by a « vomique » during excavation.
- After excavation, the contour of the internal wall is clear, the contour of the external wall is less clear.
- The sputum is purulent, and **AFB is negative**.
- Most frequent bacteria: staphylococcus aureus, anaerobic bacteria, gram negative bacteria (klebsiella, e. coli...)
Man 35 years old Cambodian, farmer, fever 39°C and right basi-thoracic pain for 7 days. Antibiotic treatment by amoxicillin failed.
Image 4 days later: abcédation.!
This is an amoebic abcess.
( hépatic amebiasis associated at the ultrasound examination)
Amoebic abscess
ASPERGILLOMA!
Aspergilloma in a formerly tubercular patient
Man, 60 years old, hemoptysis. Was treated ten years earlier for TB. AFB negative in sputum and bronchial aspiration. But detection of d’aspergillus in bronchial aspiration.
Thoracic scanner in decubitus and procubitus position
bilateral opacities
Nodules excavated

AIDS and infectious disease ward
Khmero Russian hospital, Phnom Penh

Nocardiosis
Cough and abundant morning expectoration. Frequent surinfections. Chronic respiratory failure. Digital hippocratism. AFB negative on several occasions.
Digital Hippocratism
Primary infection at the age of 1 year (1945)
22 years later...(1967)
60 years later…(2006)

Bronchectasies sequela
Bilateral bronchiectasis
Woman, 25 years old, chronic cough and expectoration. Antecedent of measles at the age of 6 months.
• Dilatations of the bronchi, (or bronchiectasis) are a frequent pathology
• The etiologies are varied: congenital malformations, sequela from early childhood infections (measles+++), tuberculous sequela
• Not to be confused with tuberculous cavitations
What is your diagnosis?

Voluminous hiatal hernia

hydro-aerique Image basale left
• An excavated image initially evokes TB. In this case, the AFB is positive.
• If AFB is negative, other diagnosis must be sought, in particular bronchial cancer in smokers and pulmonary abscess
• Other diagnosis are rare: aspergillosis, amoebic abscess (right side inf. lobe), mycosis, meliodosis…
• Don’t ignore bronchiectis, a frequent and underestimated pathology

• **Traps:**
  – A image hydro-aéric asymptomatic and rétro-cardiac can correspond to a hiatal hernia
  – An anti-TB treatment, not disclosed to the treating physician may in two or three weeks render AFB sampling negative.