

# 肺与纵隔基本病变 的影像表现

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# 基本病变的内容

- 气管、支气管：狭窄、扩张
- 肺内病变：
- 胸膜改变
- 纵隔改变
- 膈改变

# 支气管狭窄与阻塞

原因——先天和后天（良恶性肿瘤、炎症、异物）  
（腔内、腔外、管壁）

程度——完全、不完全

部位——叶、段、小叶、细支气管

- 1、阻塞性肺气肿
- 2、阻塞性肺不张
- 3、阻塞性肺炎

外压最常见原因：淋巴结增大。阻塞→阻塞性肺气肿、肺不张

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# 肺部病变

- 肺实变
- 肺不张
- 肺气肿
- 肿块或结节
- 空洞和空腔
- 钙化



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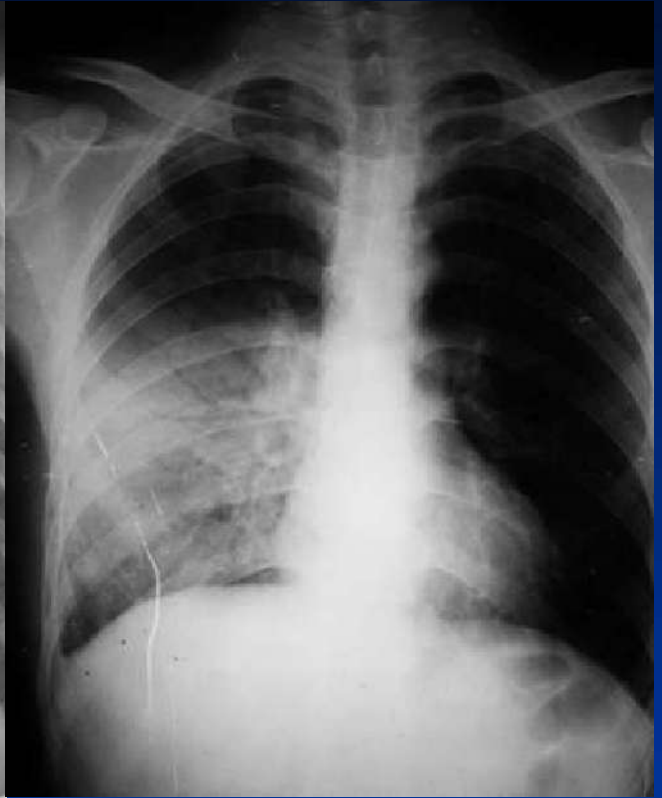
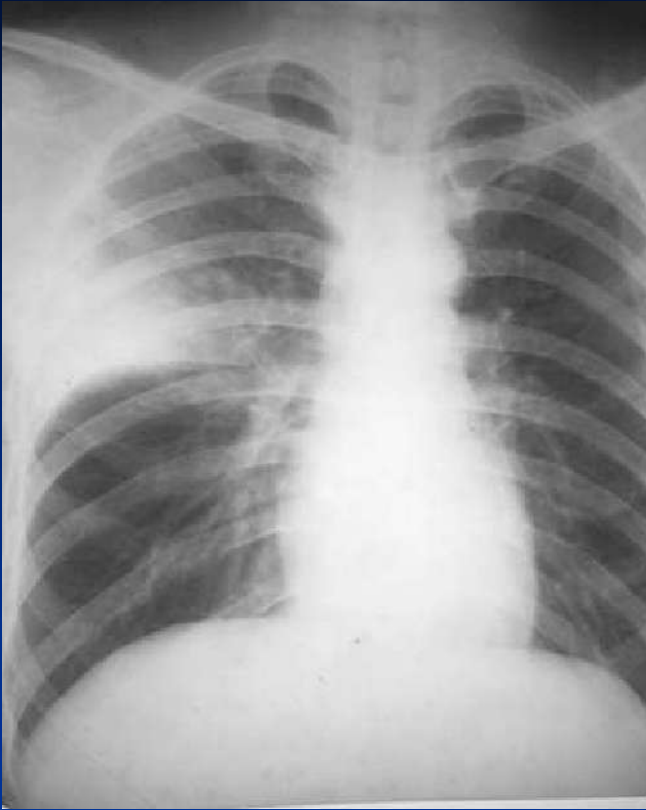
# 一、实变（Consolidation）

- 定义：终末细支气管以远的含气腔隙内的气体被病理性液体或 / 和细胞、组织取代。
- 范围：腺泡、小叶、肺段、肺叶
- 常见病理改变：炎性渗出、水肿液、血液、肉芽组织或肿瘤组织。

- 影像表现：
  - **斑片影**——密度增高，边界模糊，形态不规则。
    - \* 支气管气像 (air bronchogram)
    - \* 单一的片影
    - \* 多灶片影
- 磨玻璃影: Ground Glass Opacity, GGO**

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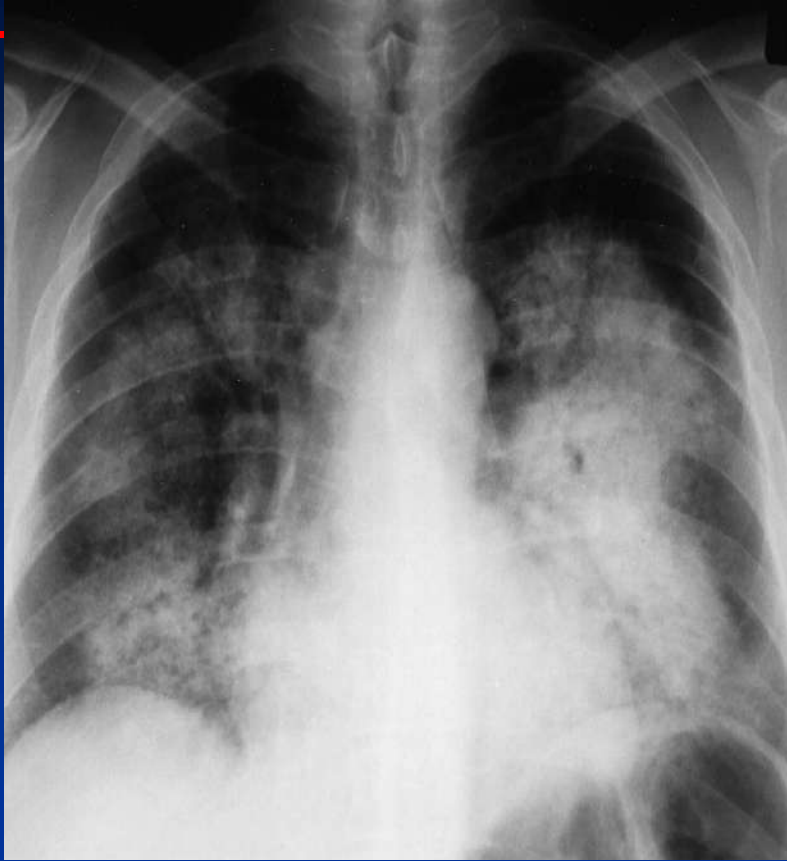


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# 肺肾综合征肺出血



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## 二、阻塞性肺不张( Atelectasis)

——为支气管腔内完全阻塞、腔外压迫或肺内瘢痕组织收缩，导致相应肺组织塌陷、肺内气体吸收、肺体积缩小改变。

原因：支气管肿瘤、腔外占位或胸腔积液积气、肺组织的大量纤维瘢痕。

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• 影像表现：

间接

直接

肺纹理聚集  
肺体积缩小  
密度增大

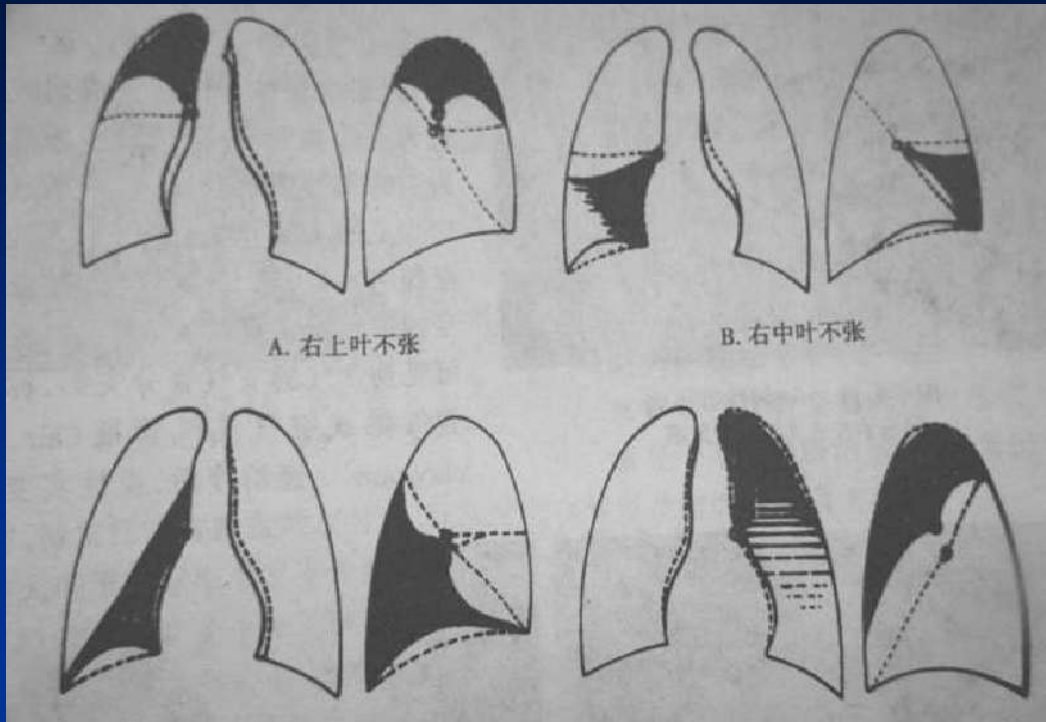
邻近肺纹理移位  
叶裂移位  
周围肺代偿性气肿  
纵隔移位  
横膈上移位  
肋间隙变窄

注：支气管完全突然阻塞后，肺泡内气体多在18~24小时内吸收

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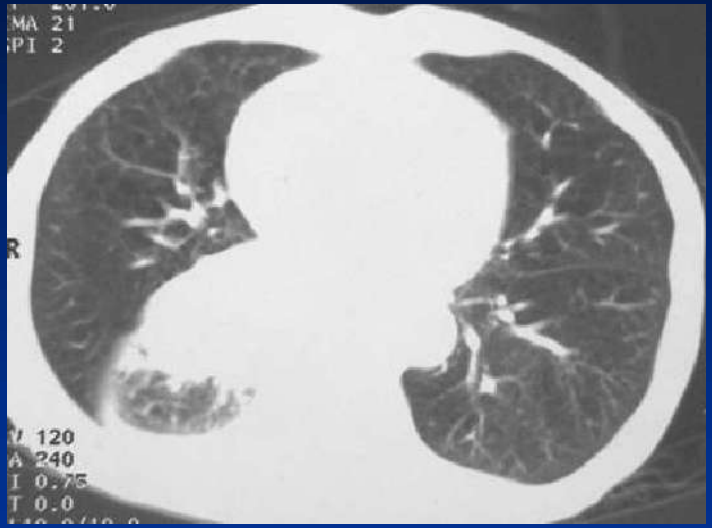


# 不同部位/范围不张X线表现



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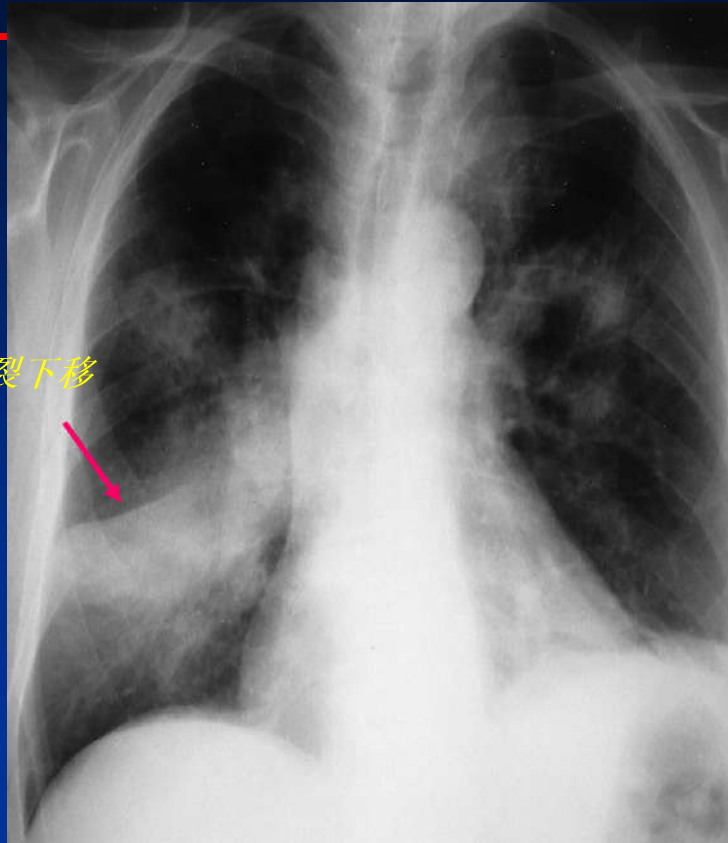


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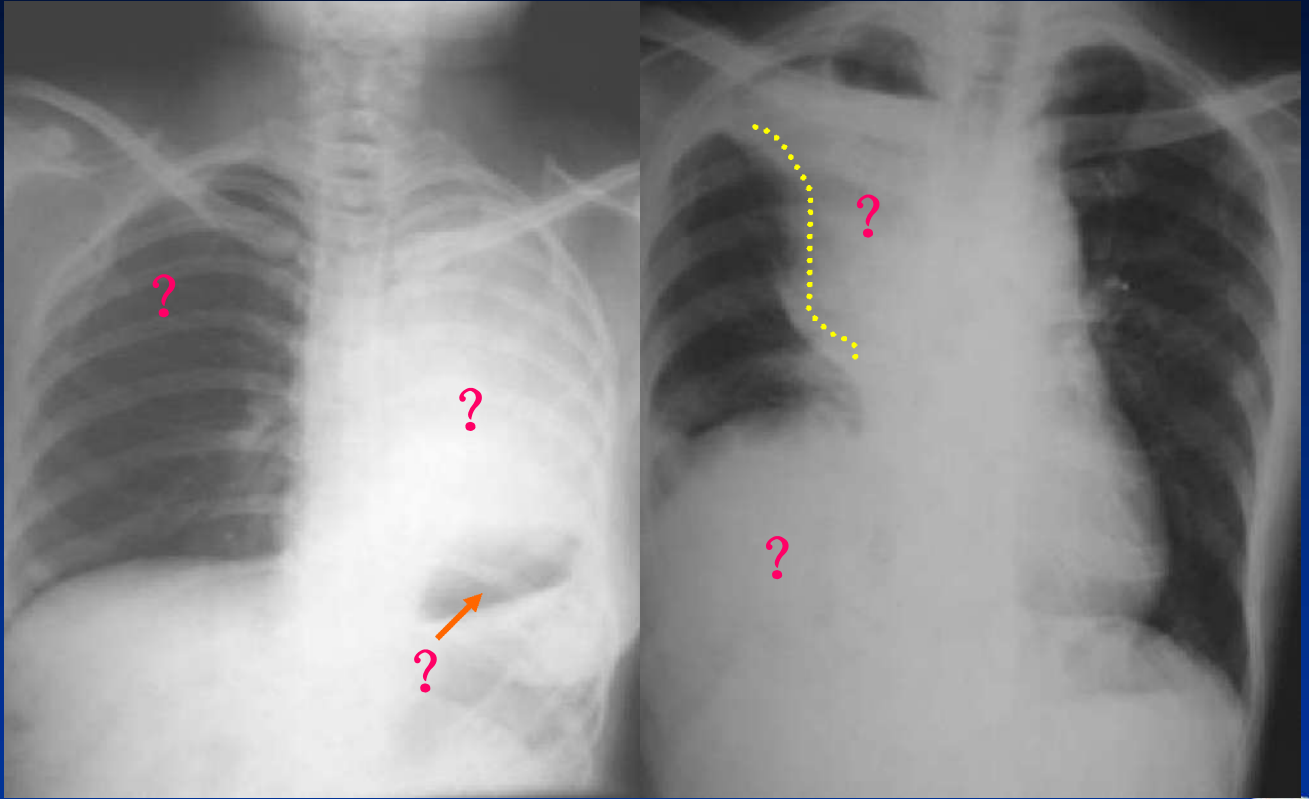
# 中叶阻塞性不张

水平裂下移



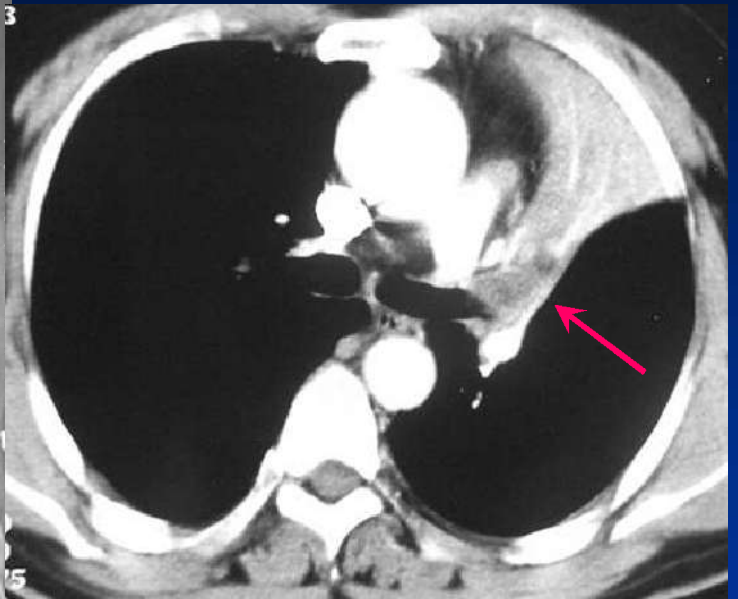
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反征 “S” 畸形

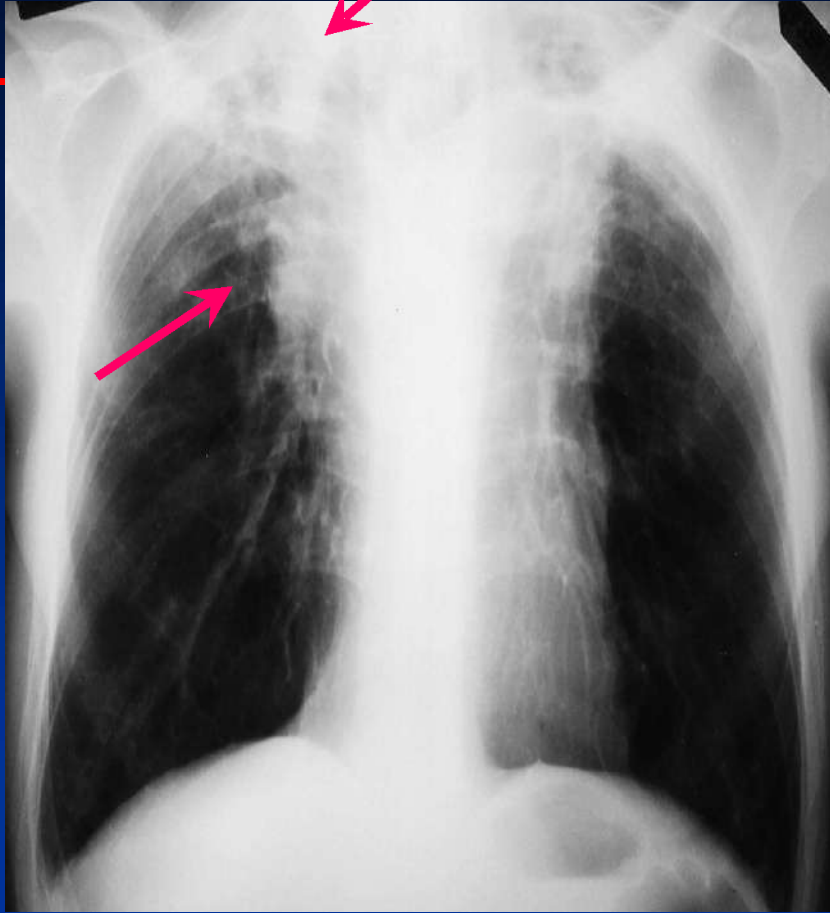




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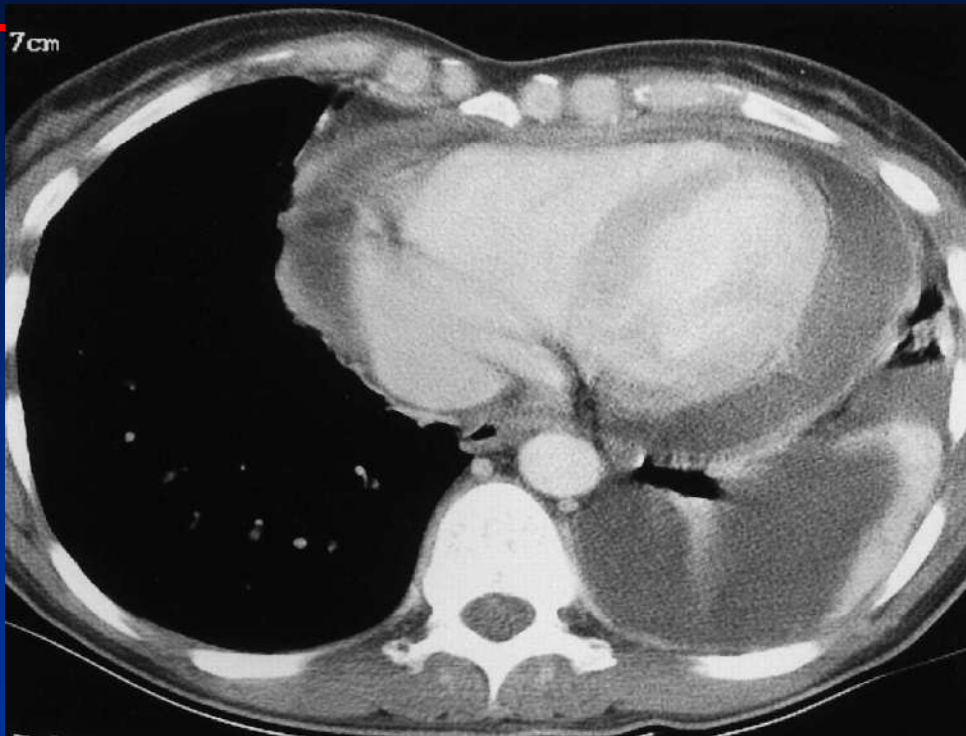


瘢痕性不张

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# 压迫性不张



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## 三、肺气肿 (Emphysema)

- **定义**：是指终末细支气管以远的含气腔隙过度充气、异常扩大，可伴有不可逆肺泡壁的破坏，即肺大泡（bullae）的形成。
- **分类**：局限性肺气肿  
弥漫性阻塞性肺气肿

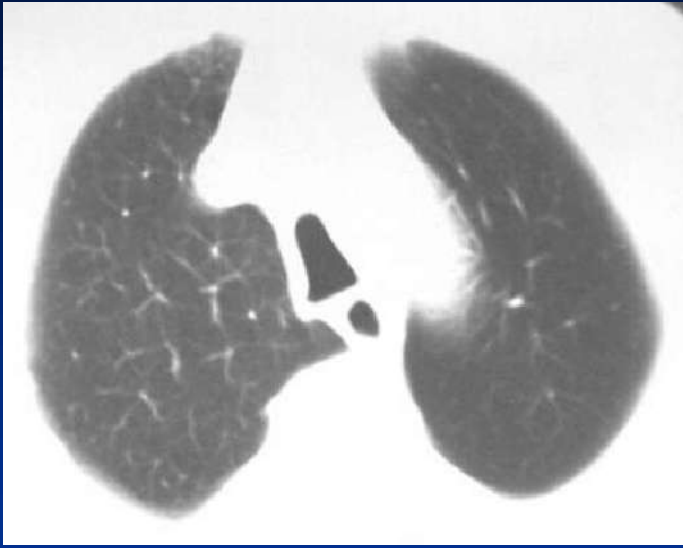
## 局限性肺气肿

——支气管部分性阻塞产生活瓣作用，吸气时空气可以进入肺内，呼气时肺内气体不能完全呼出，致阻塞远侧肺内含气量增加。

**影像表现：**肺野局部透光度增加，与阻塞范围有关。

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## 弥漫性阻塞性肺气肿

——为终末细支气管慢性炎症及狭窄，形成活瓣性呼气性阻塞，终末细支气管以远的肺泡过度充气所致，常伴有肺泡壁的破坏。

- **影像表现：**

- ① 肺体积增大

*平片表现——桶状胸、横膈下降、纵隔变窄*

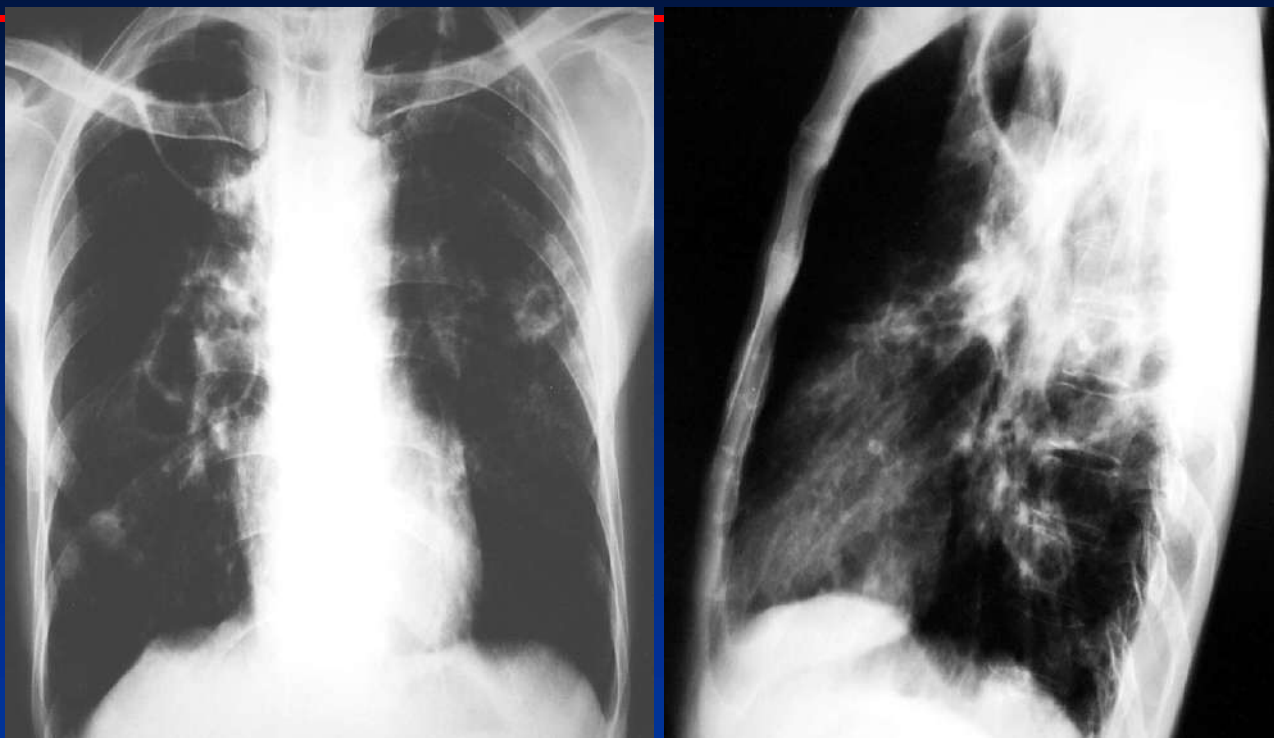
- ② 肺透明度增大；肺大泡形成

- ③ 肺纹理纤细、稀少

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# 肺气肿

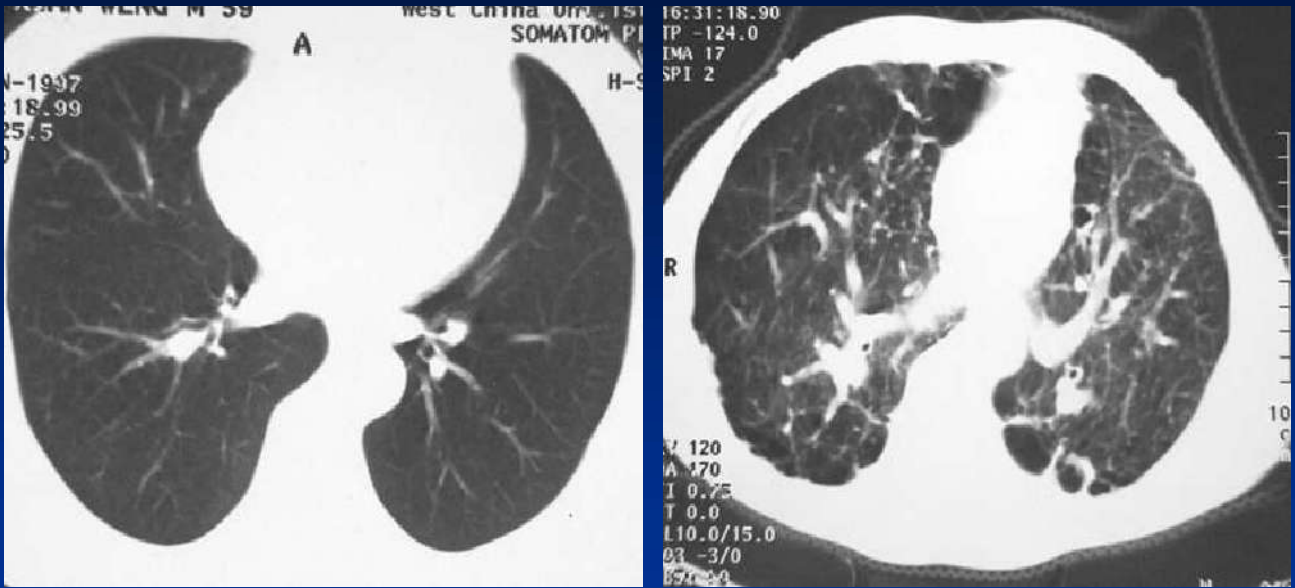


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# 肺气肿



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# CT在肺气肿诊断中的作用

- 敏感性高
- 显示早期肺气肿，显示不同类型的局灶性气肿
- 采用软件量化气肿程度
- 显示造成阻塞性气肿的原因：

如：占位阻塞支气管

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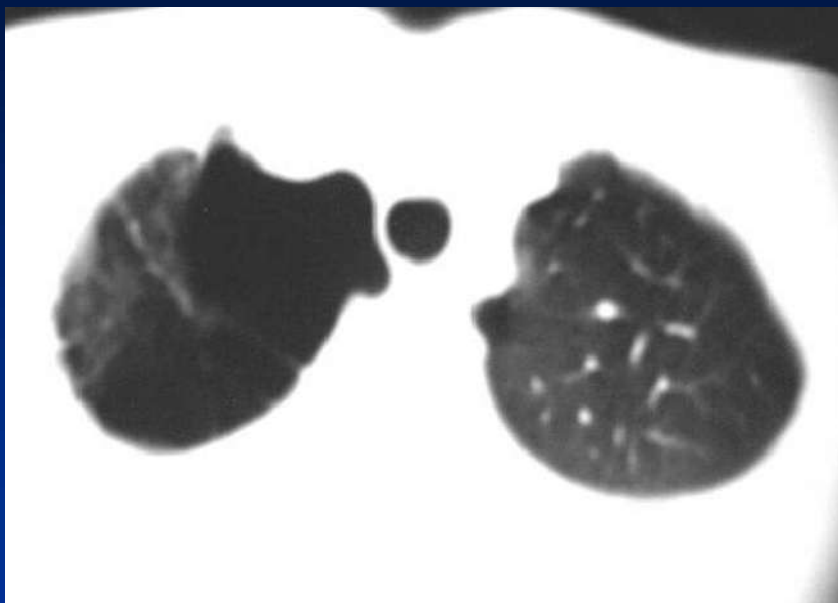
# 肺气肿的CT分类

| 类型    | 分布部位    | 表现    | 原因       |
|-------|---------|-------|----------|
| 小叶中央型 | 中上肺，中内带 | 斑片状   | 慢支炎      |
| 全小叶型  | 双肺广泛    | 广泛    |          |
| 间隔旁型  | 局限胸膜下   | 条带状分布 | 慢支炎，间质病变 |
| 瘢痕旁型  | 纤维化旁    | 局限性   | 结核、尘肺    |

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# 肺气肿



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## 四、肿块与结节

- 定义：肿瘤及肿瘤样病变形成的圆形或类圆形影。

**肿块(mass)：直径 > 3cm**

**结节(nodule)：直径 ≤ 3cm**

- 常见疾病：肺癌、结核球、炎性假瘤、坏死性肉芽肿等。

**观察要点：密度；边缘；周围征象**

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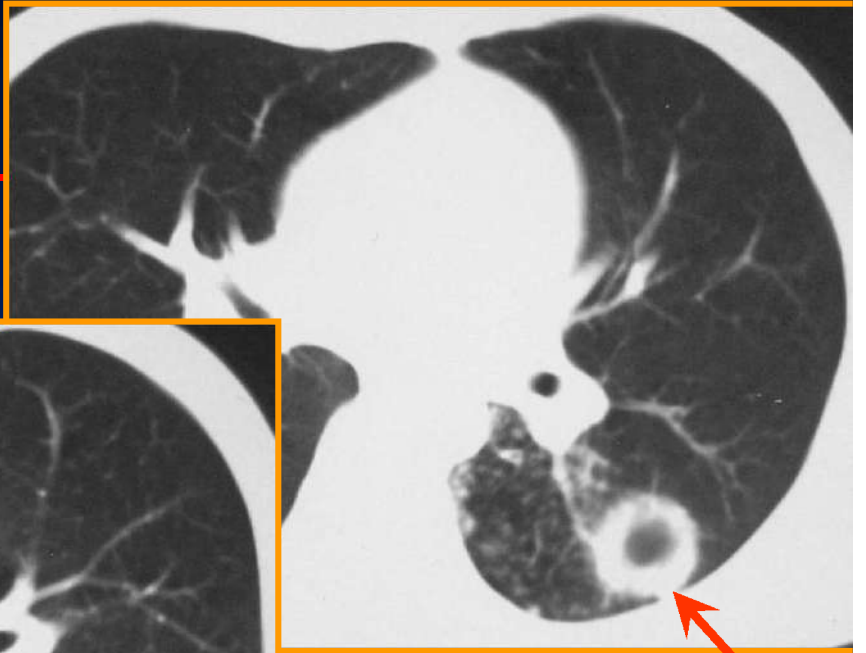


## ◆基本概念

- 卫星灶 (satellite)
- 晕征(halo sign)
- 空气半月征(air crescent)
- 分叶征(lobulation)
- 毛刺征(spiculation)
- 支气管气像(air brochogram)
- 血管集束征(vessel convergence)
- 胸膜凹陷征(pleural indentation sign)

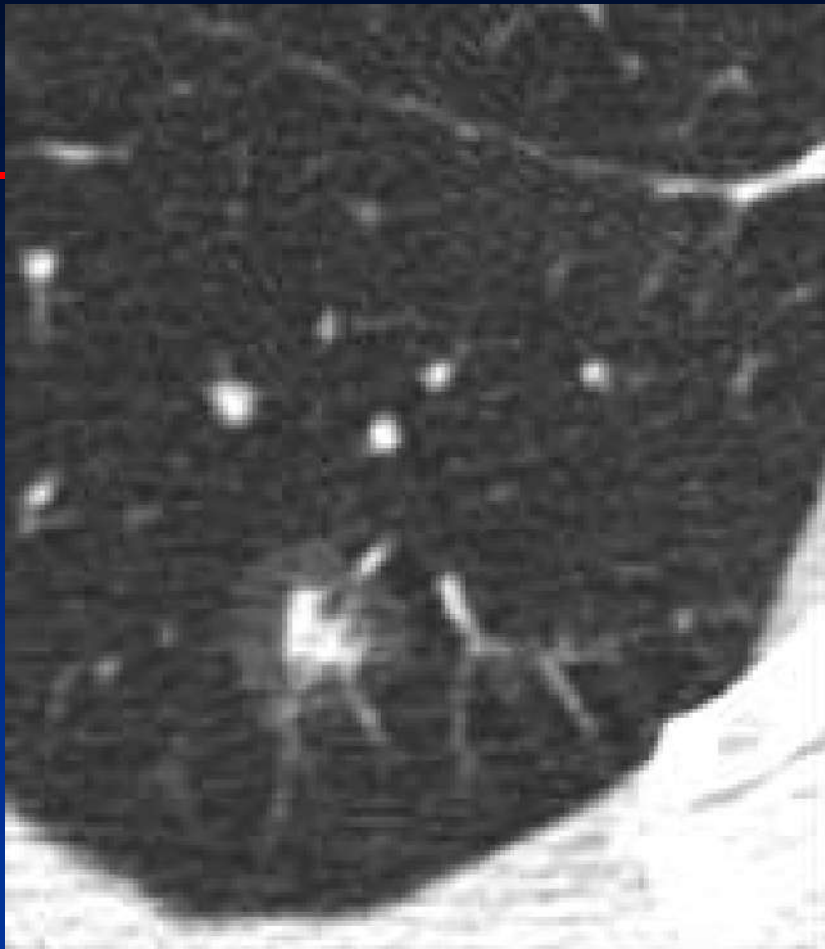
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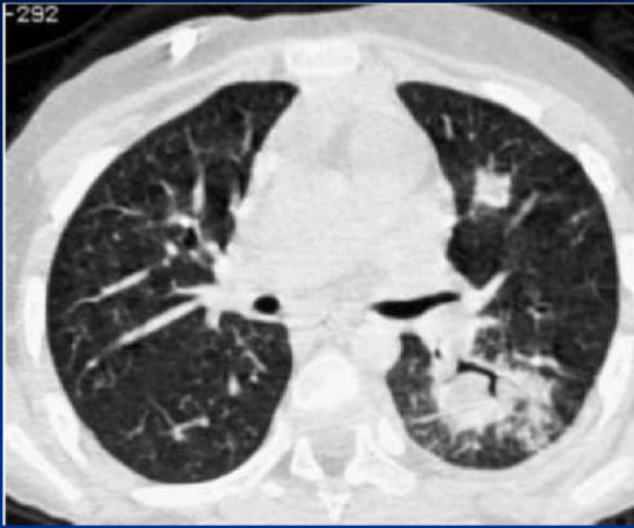




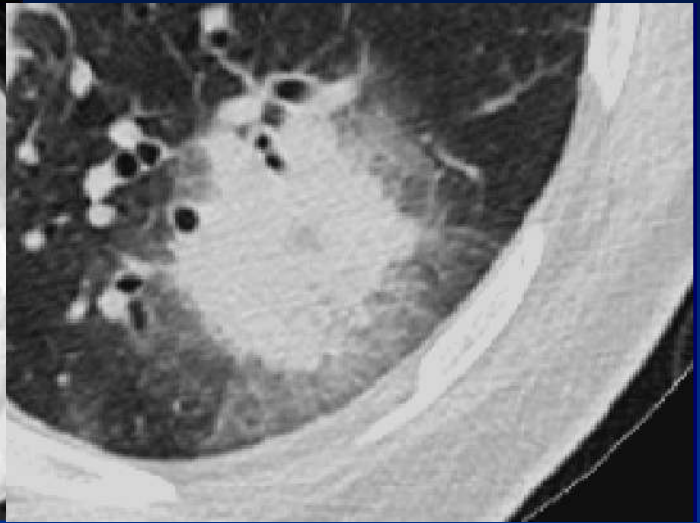
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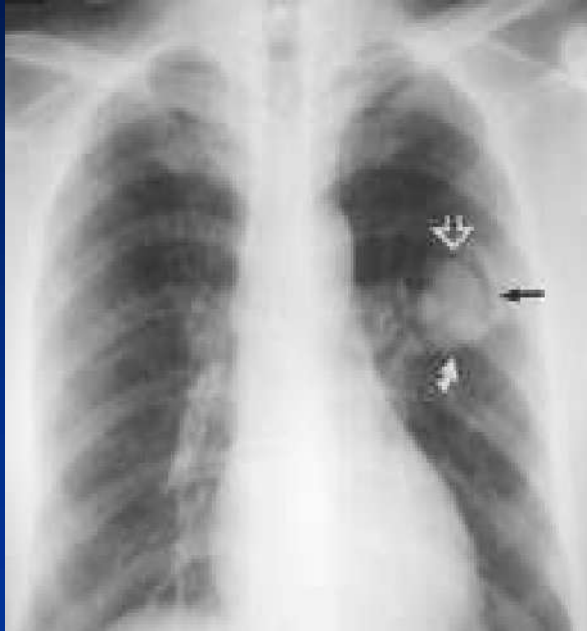


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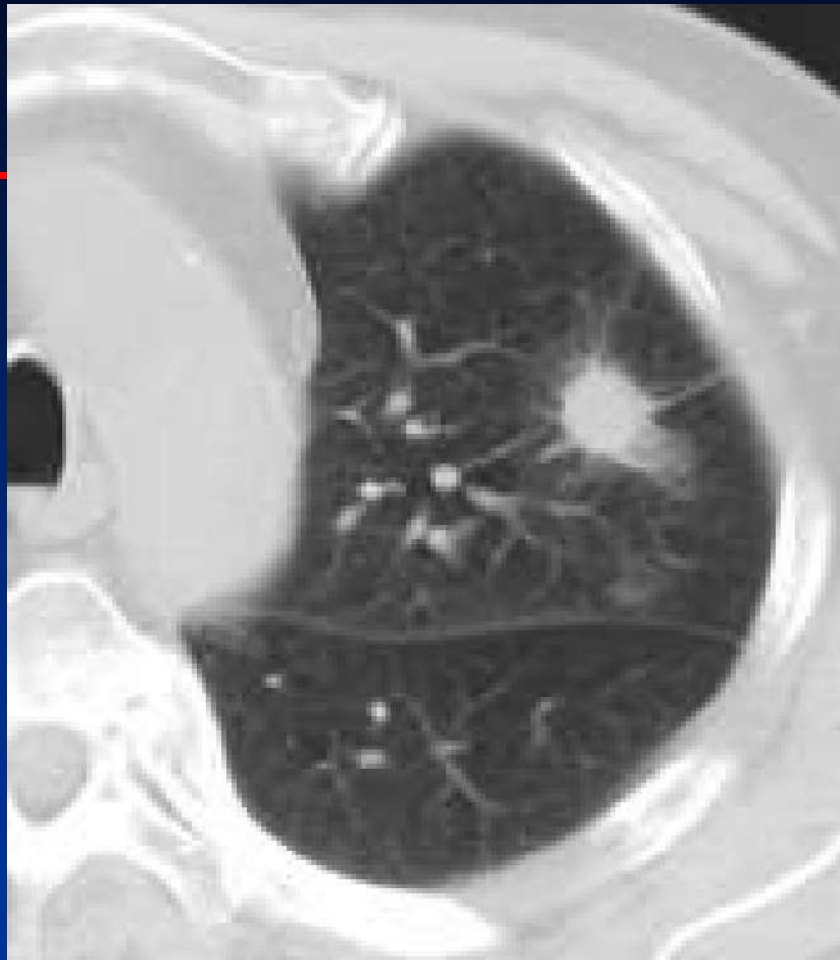


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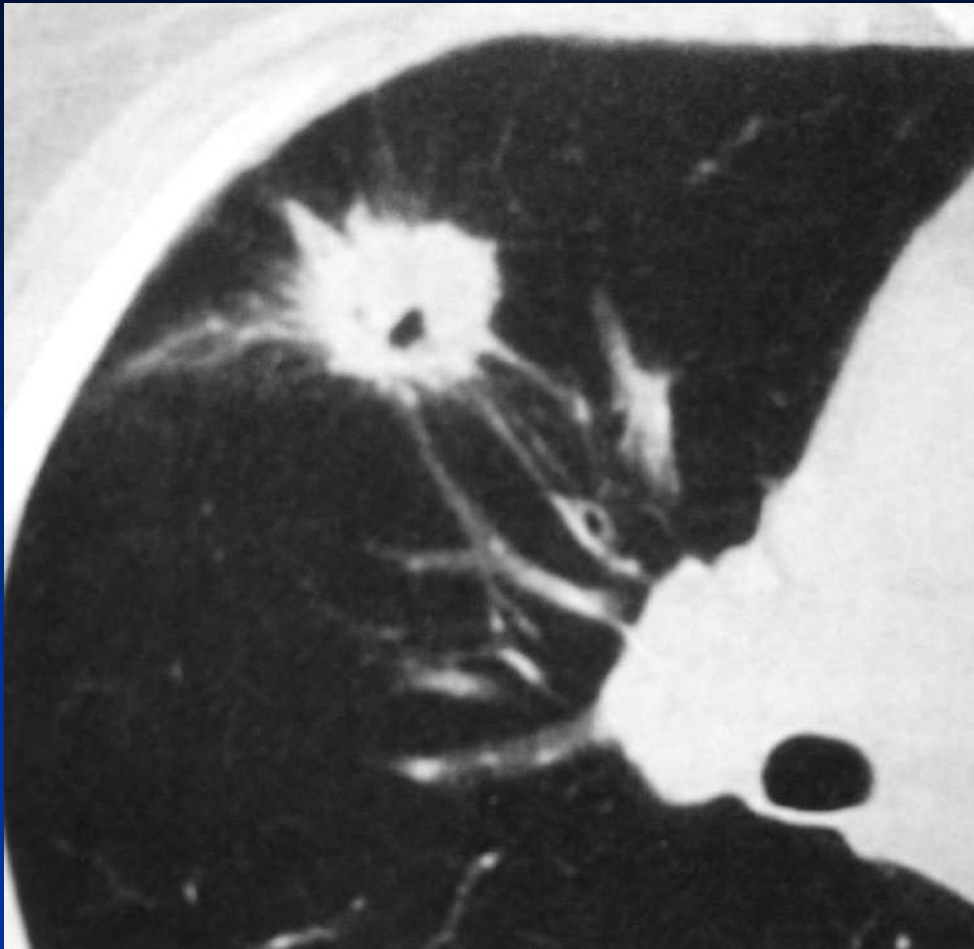




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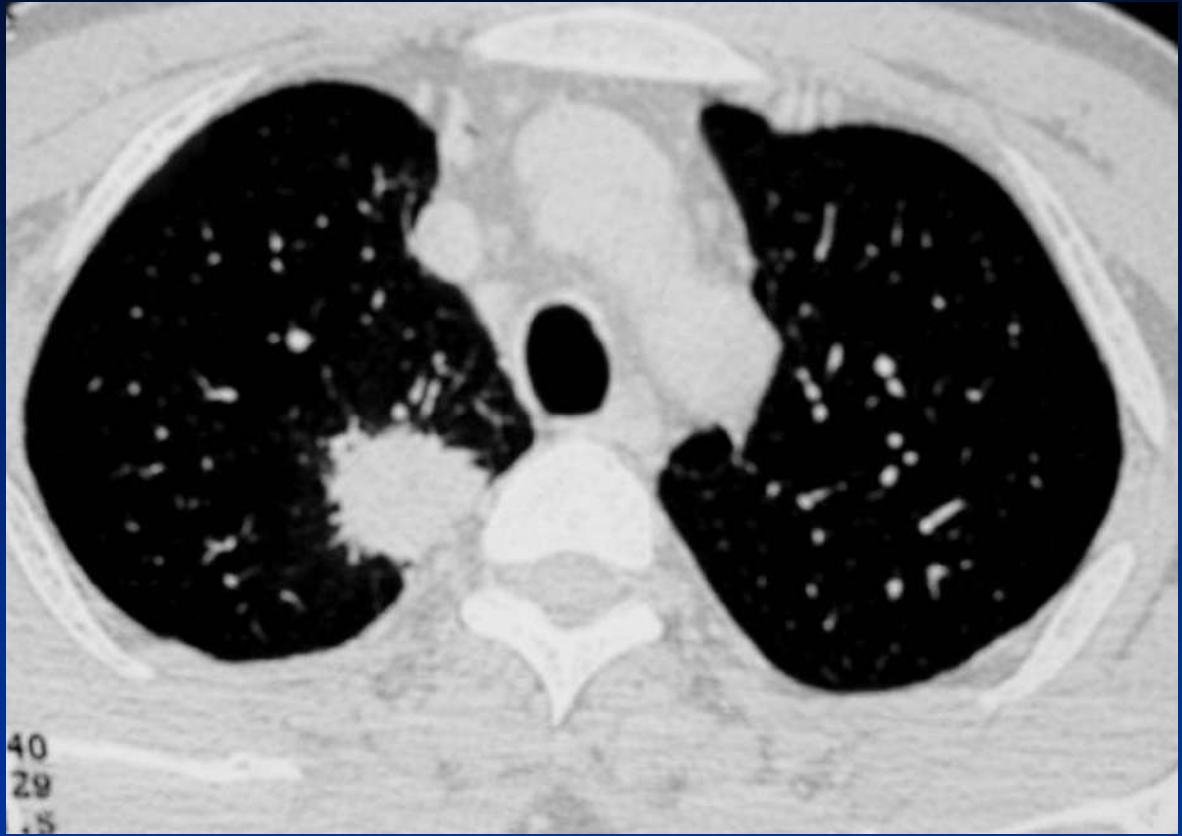
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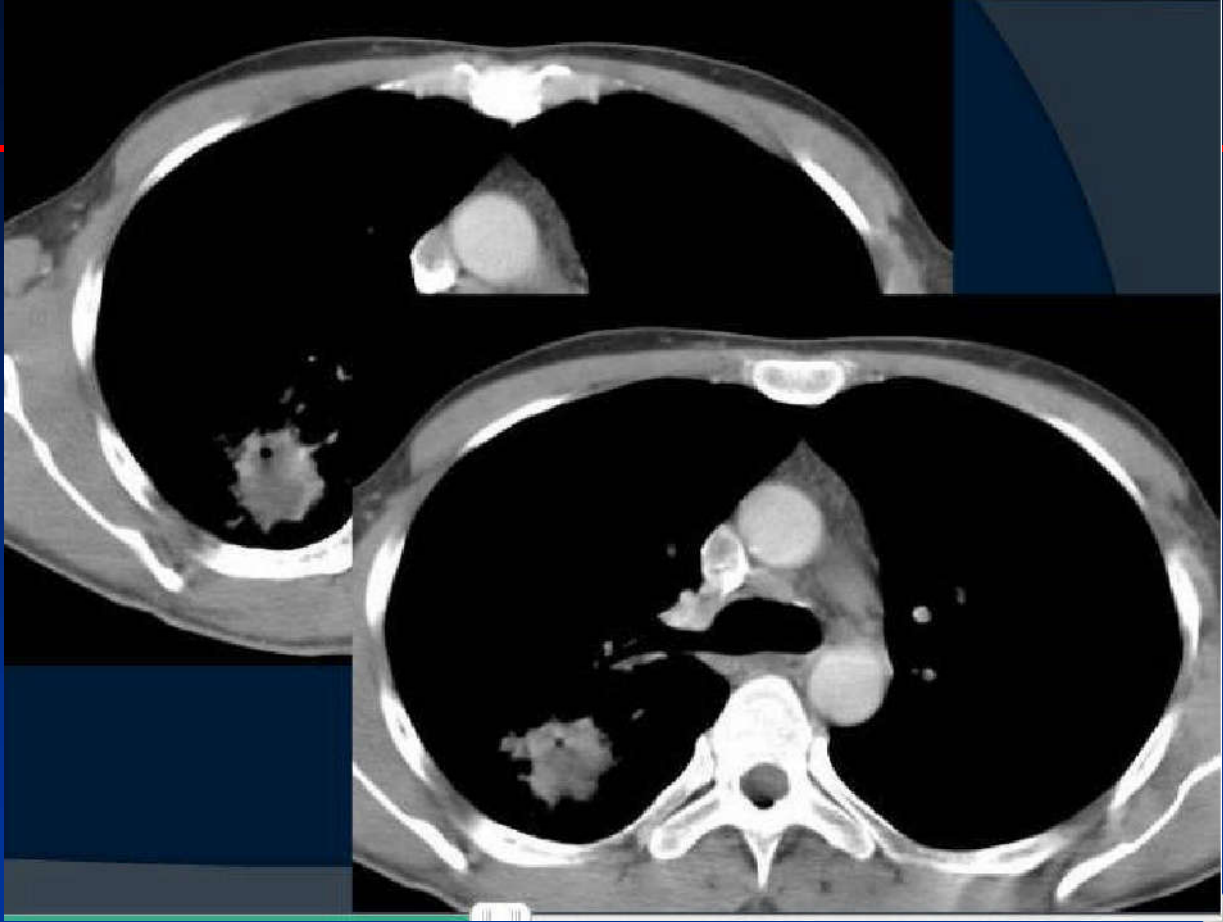


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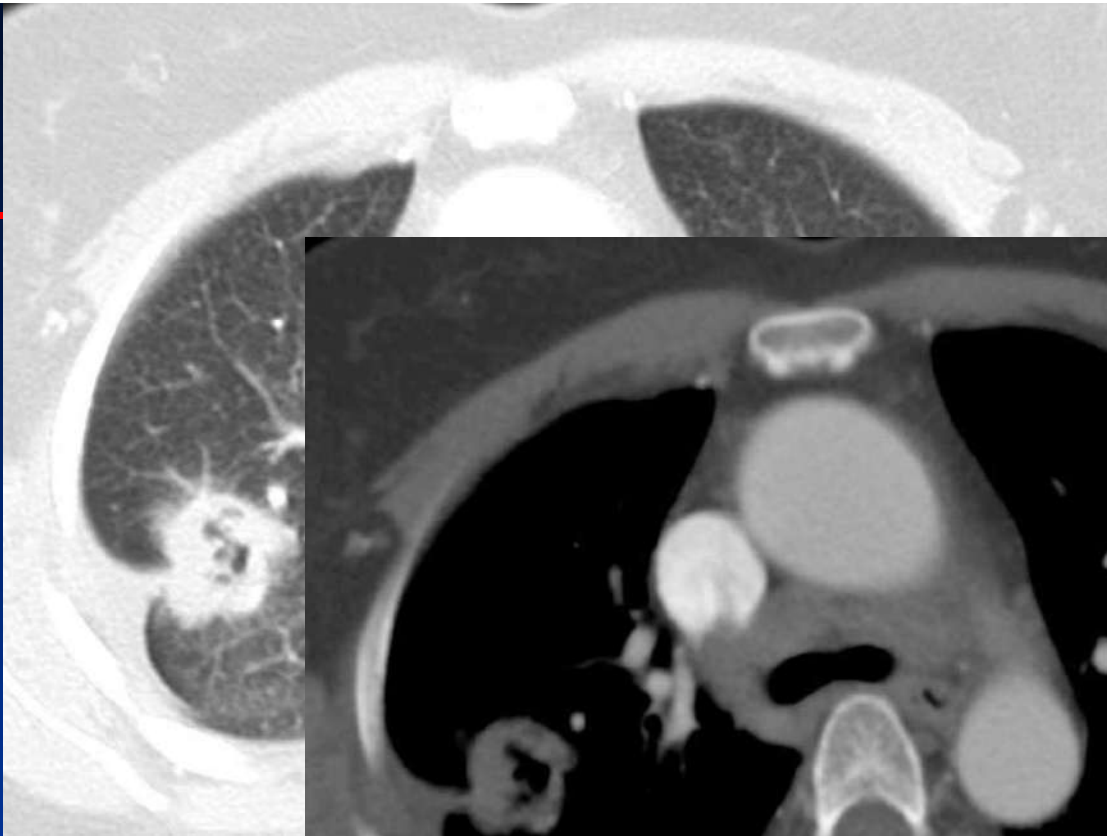
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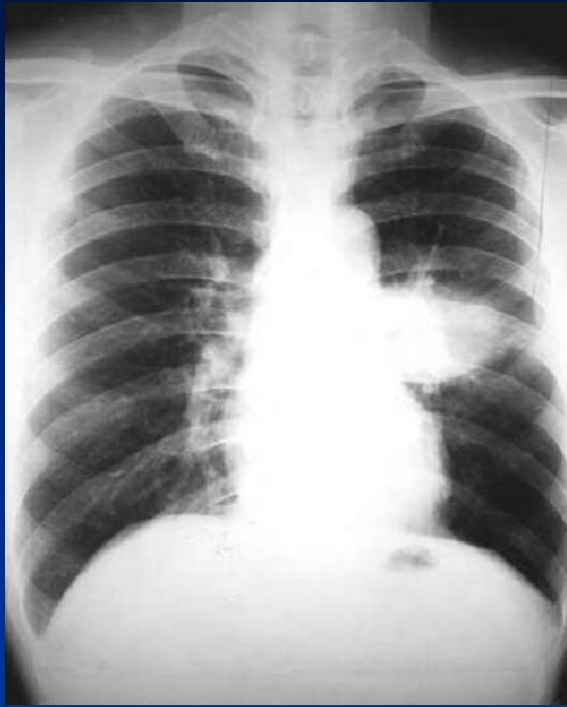






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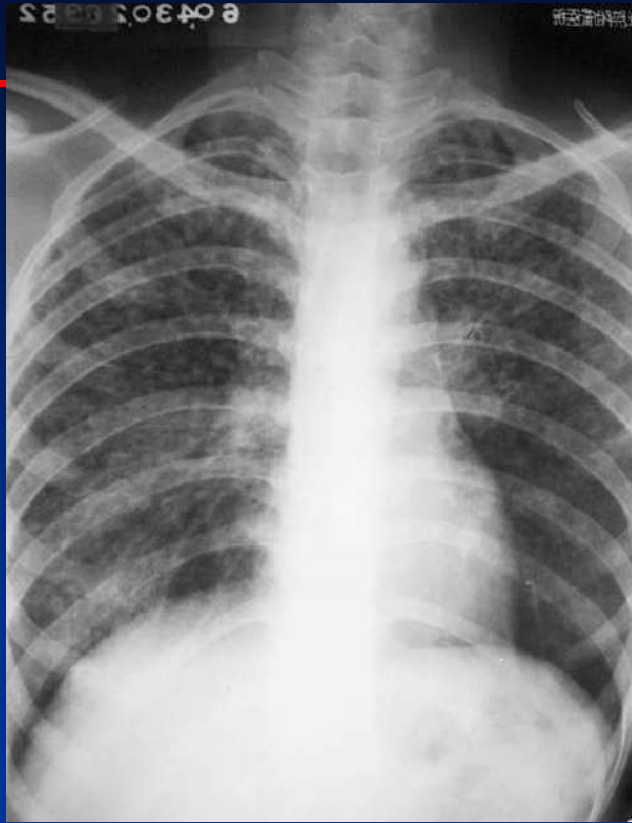
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- **腺泡结节**：4~7mm大小，边缘较清楚，可呈梅花瓣状的结节，相当于腺泡范围的结节，常见于肺结核。
- **粟粒结节**：< 4 mm的结节。可见于粟粒肺结核，血行转移性肺肿瘤、矽肺、癌性淋巴管炎。



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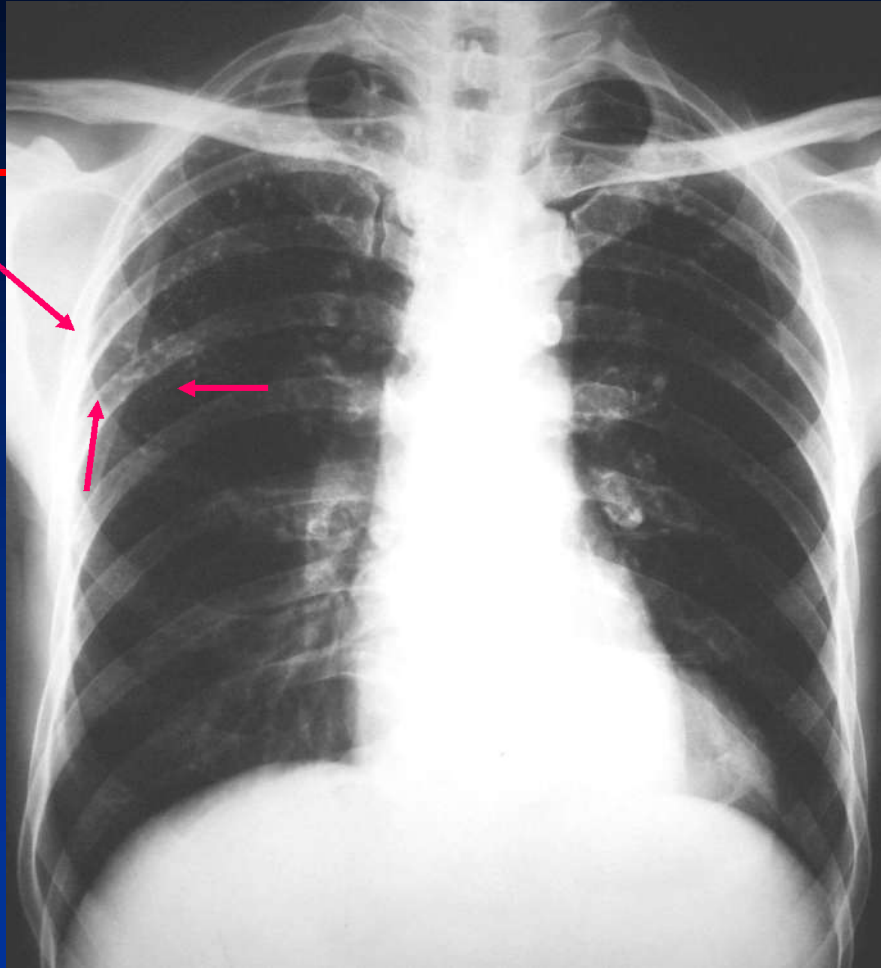
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## 良性与恶性肿瘤的鉴别点：

- \* 轮廓——分叶？
- \* 边缘——光滑锐利？毛刺？胸膜凹陷？  
支气管充气征？
- \* 密度——均匀？空洞？钙化？
- \* 周围——血管集束征？
- \* 邻近——淋巴结增大？胸水？

## 五、钙化(calcification)

- 定义：钙盐沉积于病理组织形成的高密度影。可为炎症修复或为肿瘤成分。
- 表现：单发，多发点状——结核  
爆米花——错构瘤  
蛋壳样——淋巴结



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## 六、空洞（cavity）与空腔

（intrapulmonary air containing space）

- **空洞**：病变发生坏死，坏死组织经支气管排出后形成的病理腔隙。
- 空洞壁的构成：可由坏死组织、肉芽组织、纤维组织和肿瘤组织形成。
- 常见疾病：肺癌、结核球、肺脓肿等。

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- **空腔**：肺内生理间隙的病理性扩大
- 表现：壁薄，均匀的含气环形影
- 常见原因：肺大泡、支气管囊肿、囊状支气管扩张

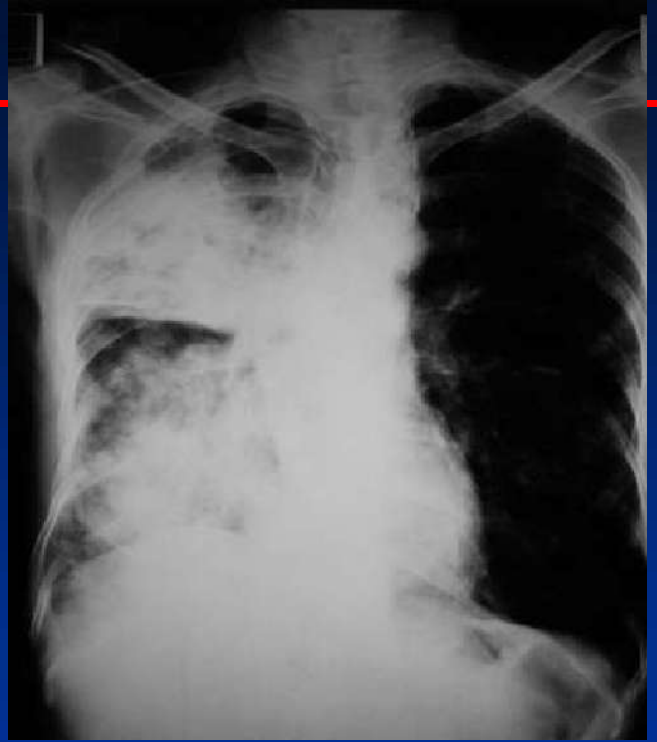
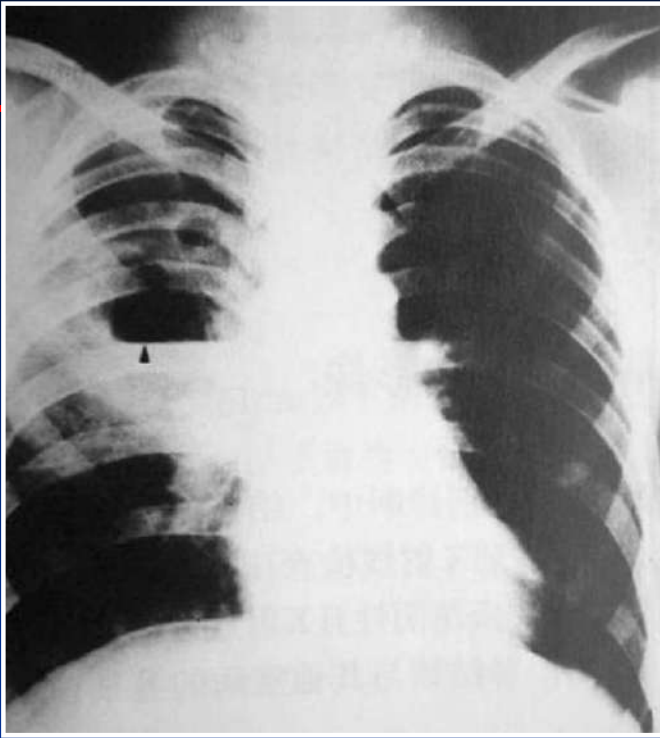
**注：可继发感染形成厚壁。**

**空洞与空腔有时难以鉴别**

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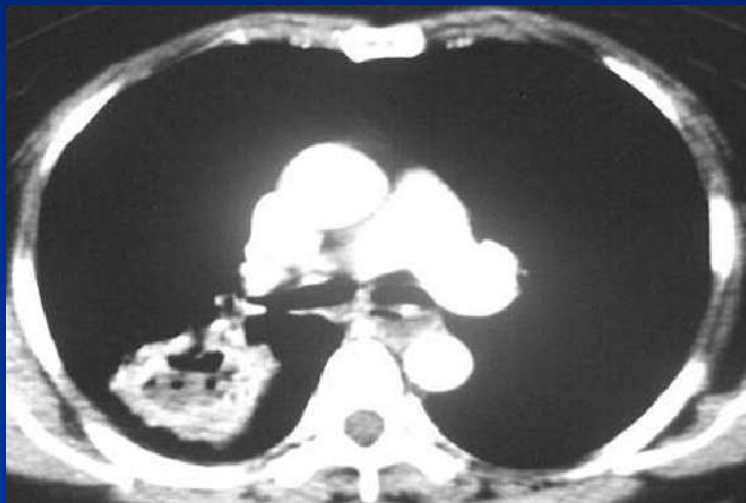


- 分类：厚壁空洞 壁厚 $>3\text{mm}$   
薄壁空洞 壁厚 $< 3\text{mm}$   
虫蚀样空洞
- 各种空洞（结核、肺癌、肺脓肿的空洞）的鉴别点：
  - \* 壁厚度
  - \* 壁的规则度
  - \* 空洞在病变区的位置
  - \* 有无液平



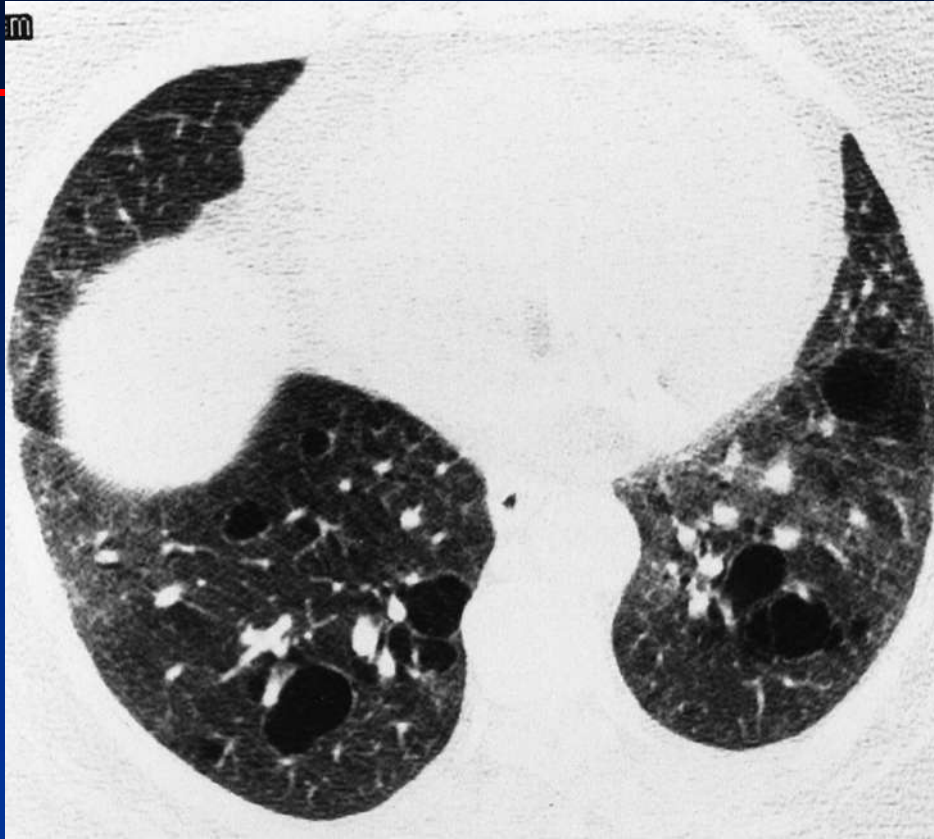
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# 肺大泡伴感染壁增厚

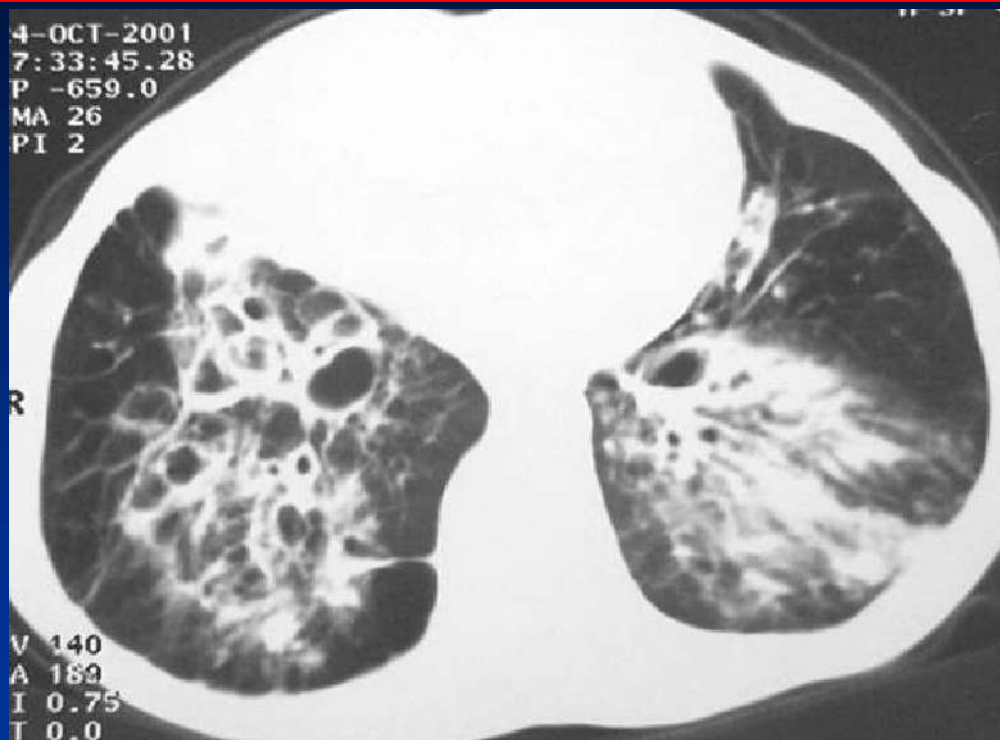


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# 囊状支气管扩张伴感染



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## 七、间质性病变

### (interstitial abnormalities)

- **定义：**为发生在肺间质的弥漫性病变，主要分布在支气管血管周围、小叶间隔及肺泡间隔。
- **病理改变：**渗出或漏出液、炎性细胞浸润、纤维结缔组织增生、肿瘤细胞淋巴管浸润

- 肺间质病变的X线表现：

- \* 肺纹理增粗、模糊：

- \* 索条影

- \* 网状影

- \* 间隔线：Kerley's A、B线

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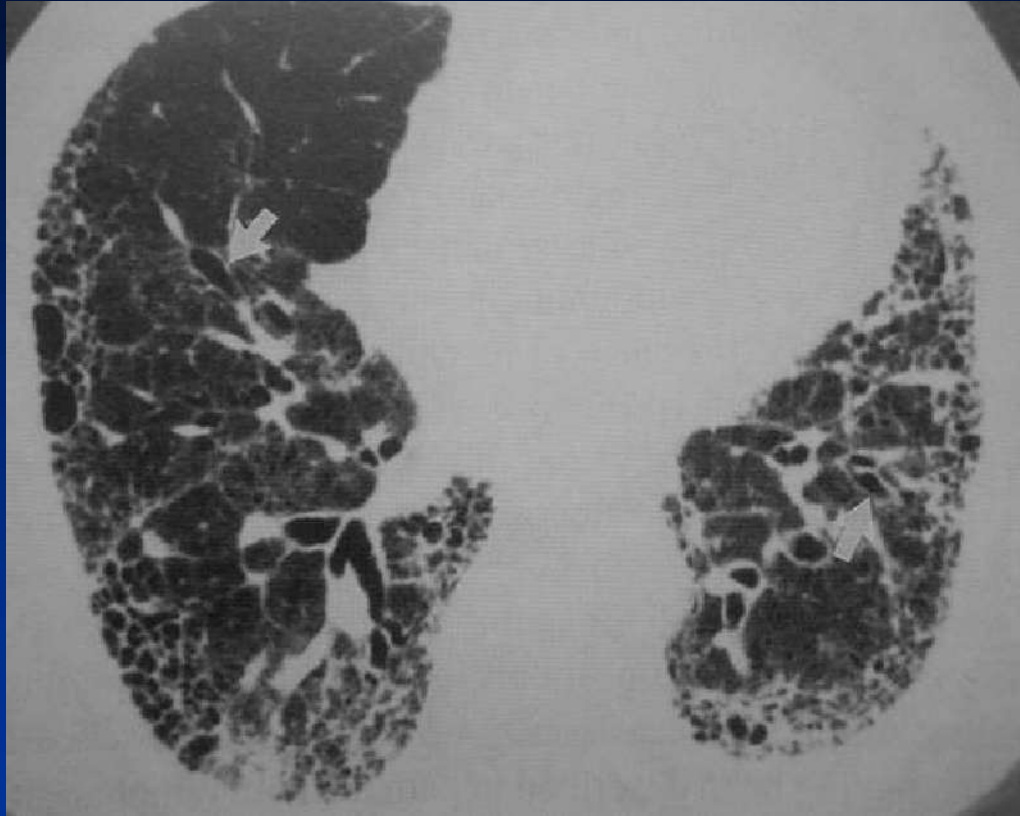
## • 肺间质病变的HRCT表现：

- \* 支气管血管束周围间质增厚：肺纹理增粗
- \* 小叶间隔增厚
- \* 胸膜下线显示
- \* 纤维索条
- \* 蜂窝征
- \* 磨玻璃样改变（GGO）
- \* 结节影

树芽征 (tree-in-bed) ???

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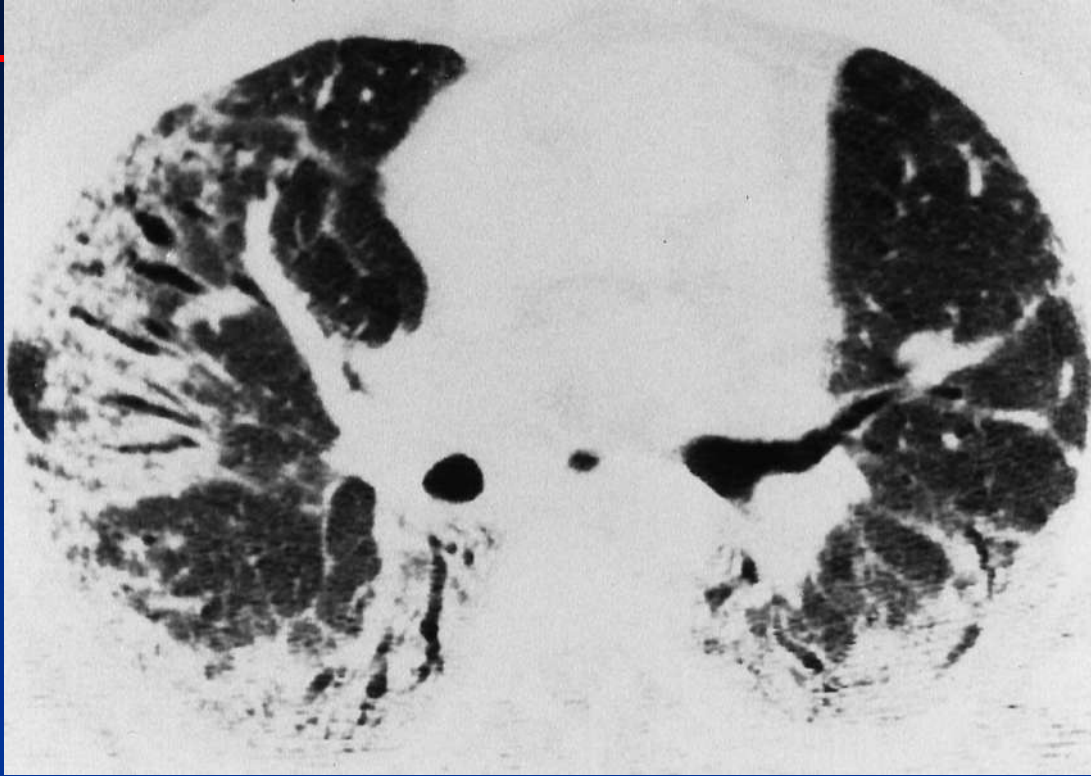




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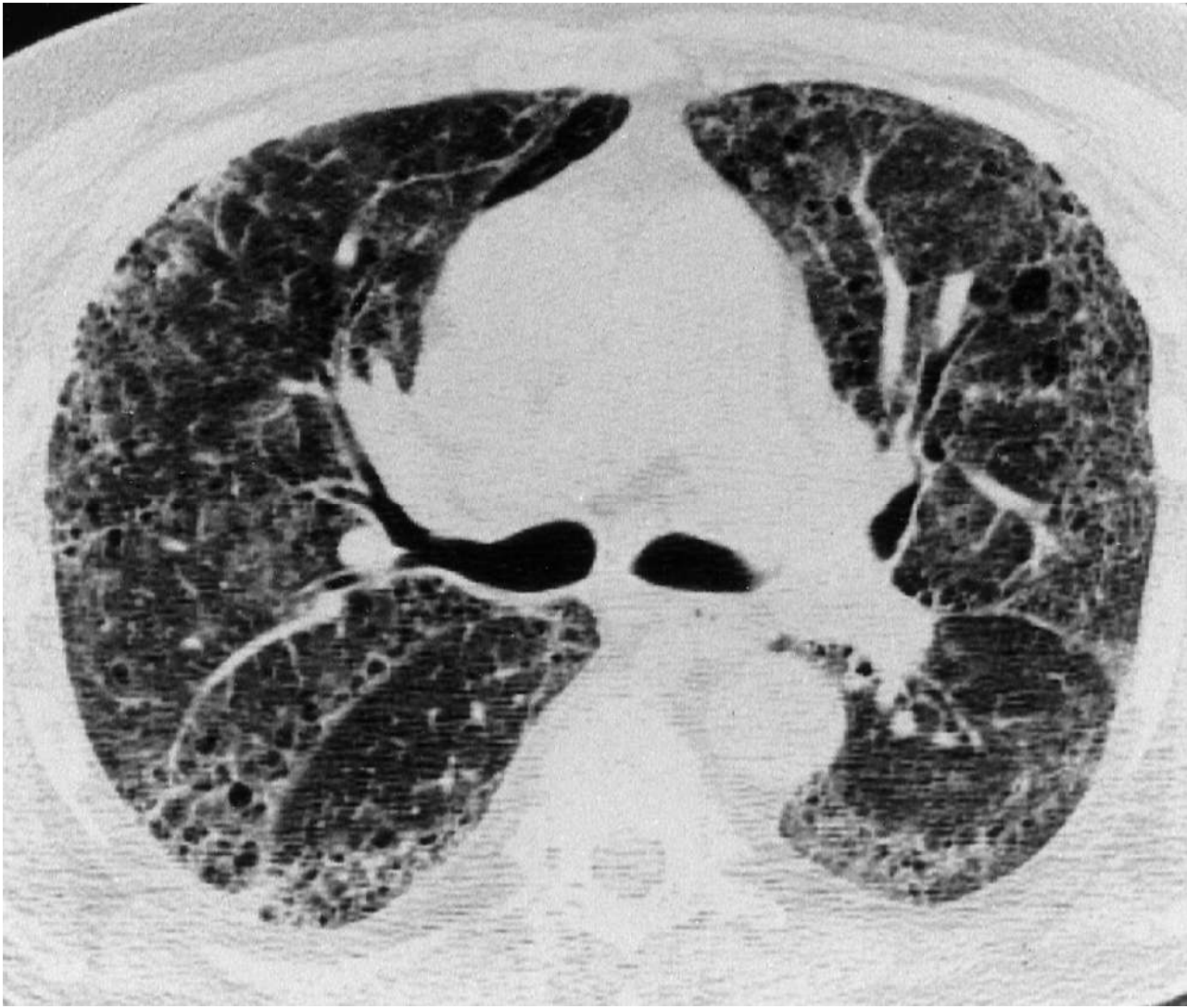
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# 胸膜改变

胸腔积液  
(pleural effusion)

气胸(pneumothorax)

胸膜增厚、粘连、钙化

胸膜疾病

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# 一、胸腔积液

## 游离性积液

- 少量
- 中量
- 大量

## 局限性积液

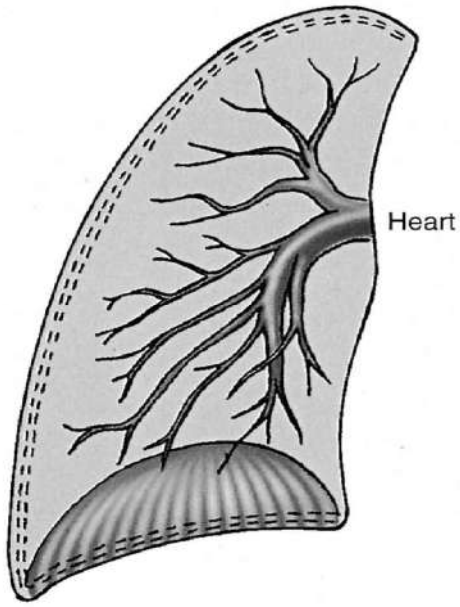
- 包裹性
- 叶间积液
- 肺底积液
- 纵隔旁积液

注意：各种积液的表现???

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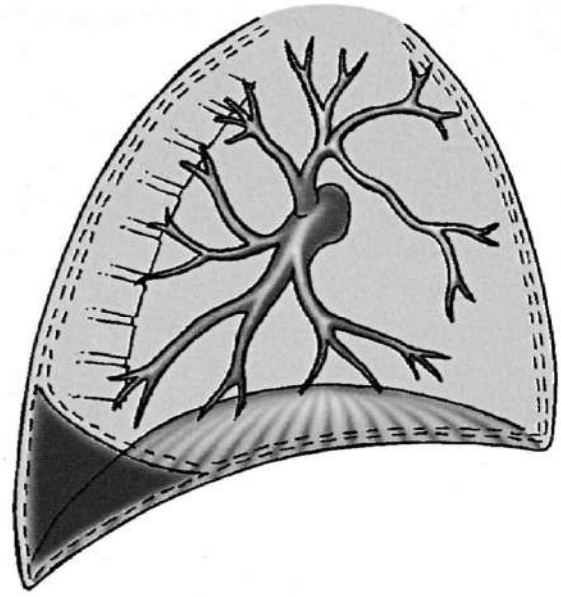






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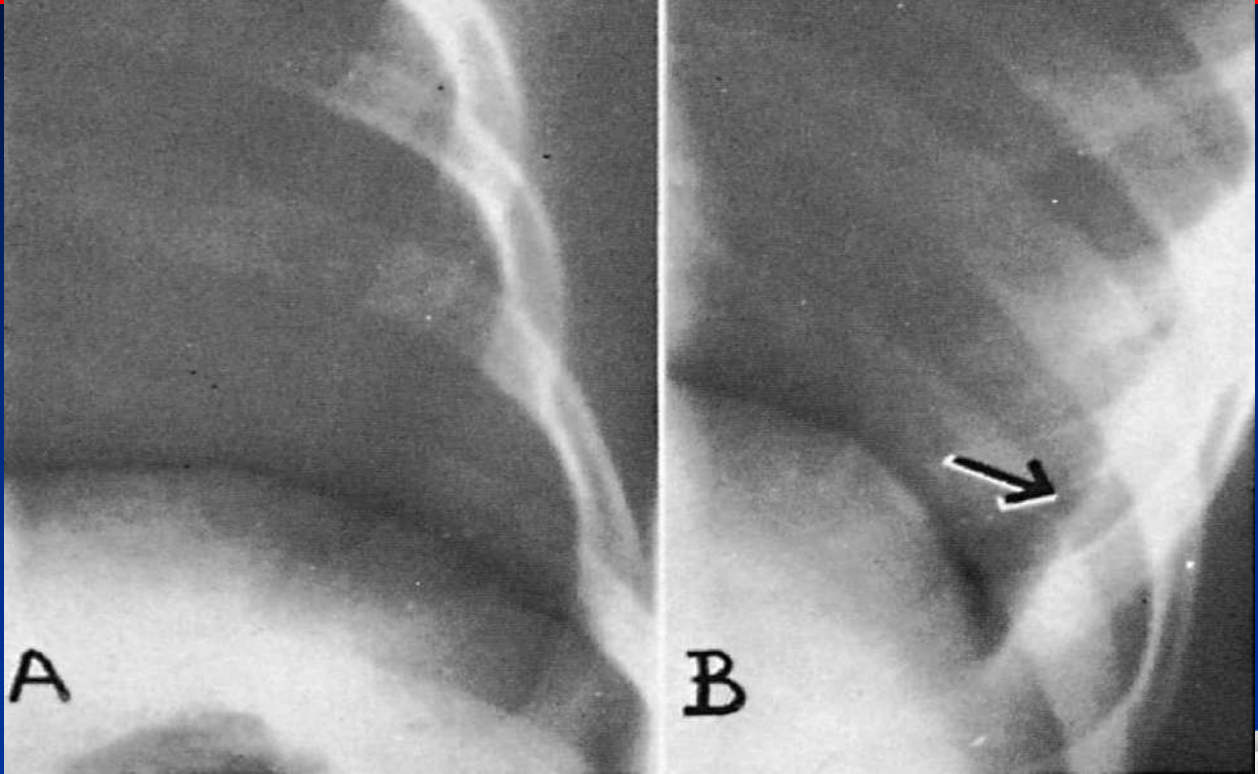


Right lateral

华西放射



# 少量积液



华西放射



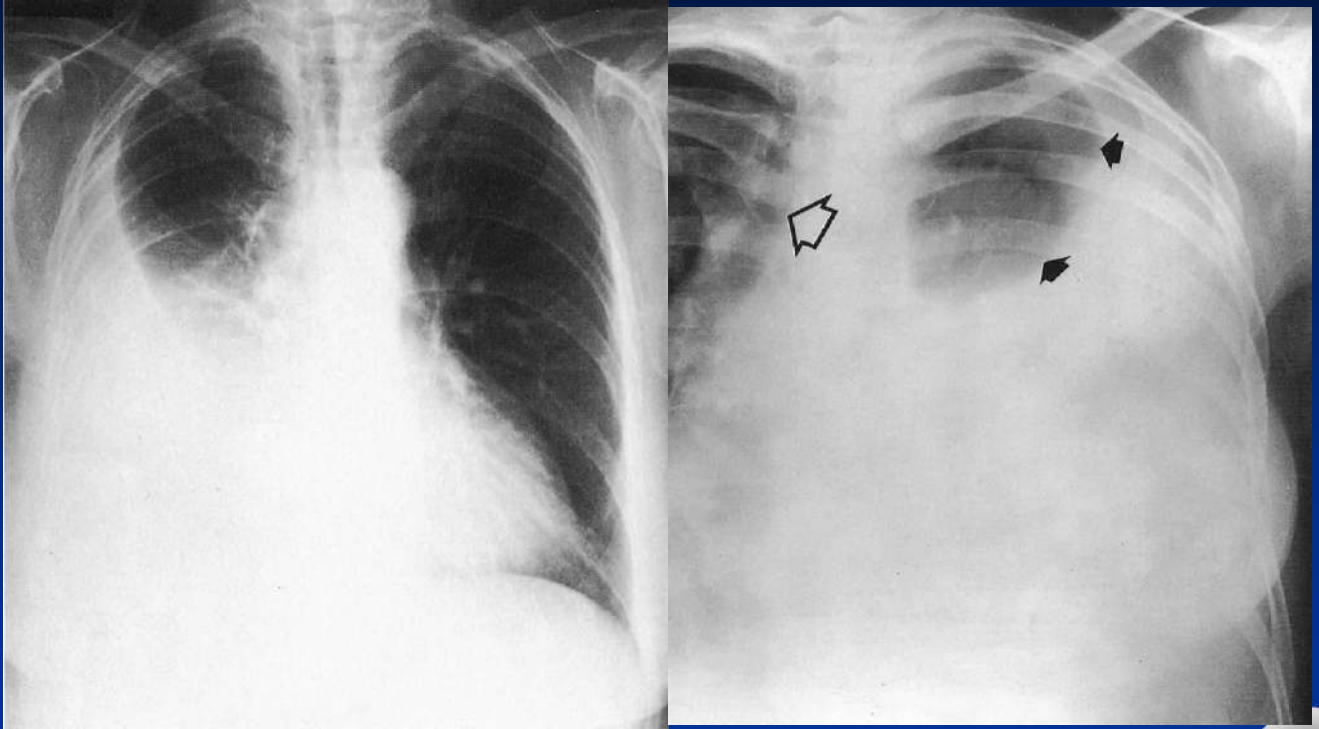
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少量积液

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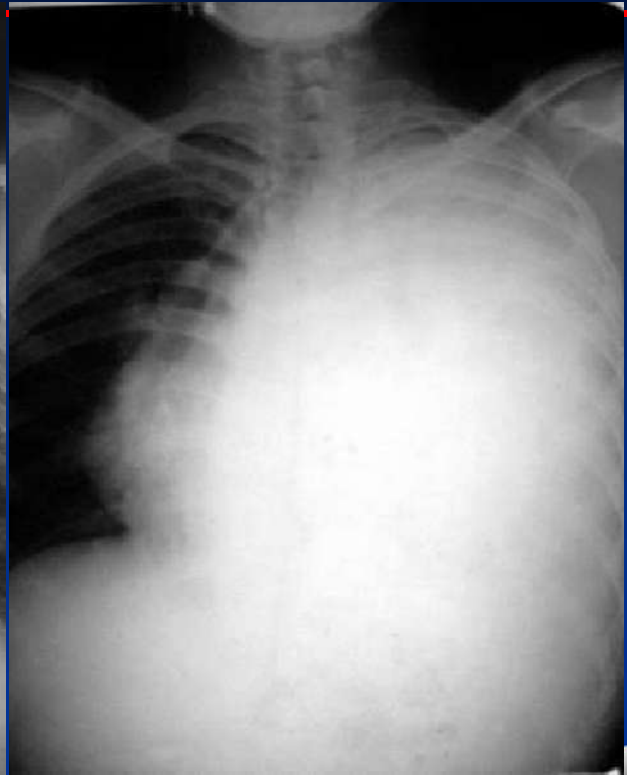
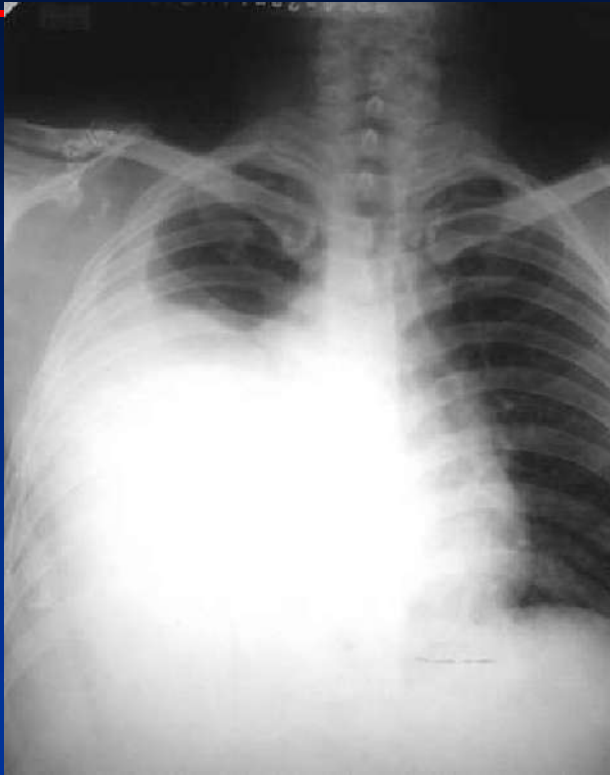




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## 局限性积液

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## 二、气胸(pneumothrorax)

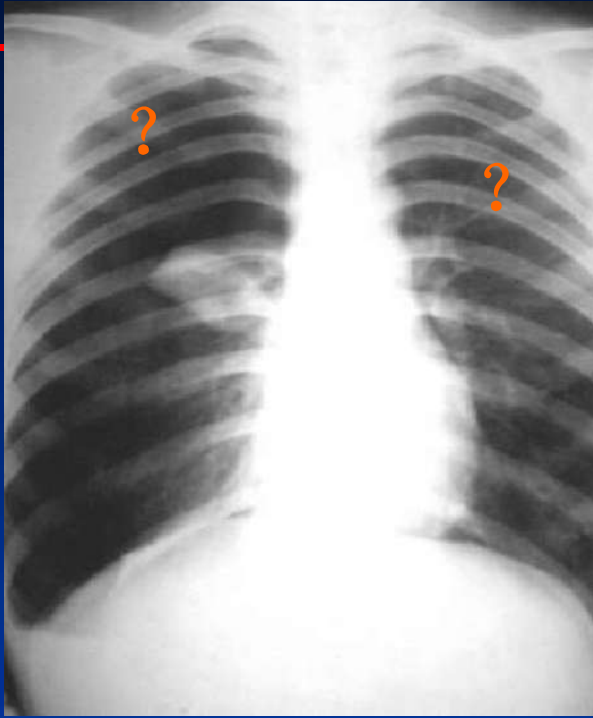
- 定义：空气进入胸膜腔内。
- 原因：外源性：外伤  
          内源性：支气管胸膜瘘/自发性气胸
- 表现：肺不张/气胸带

液气胸——胸膜腔内同时有气体和液体。

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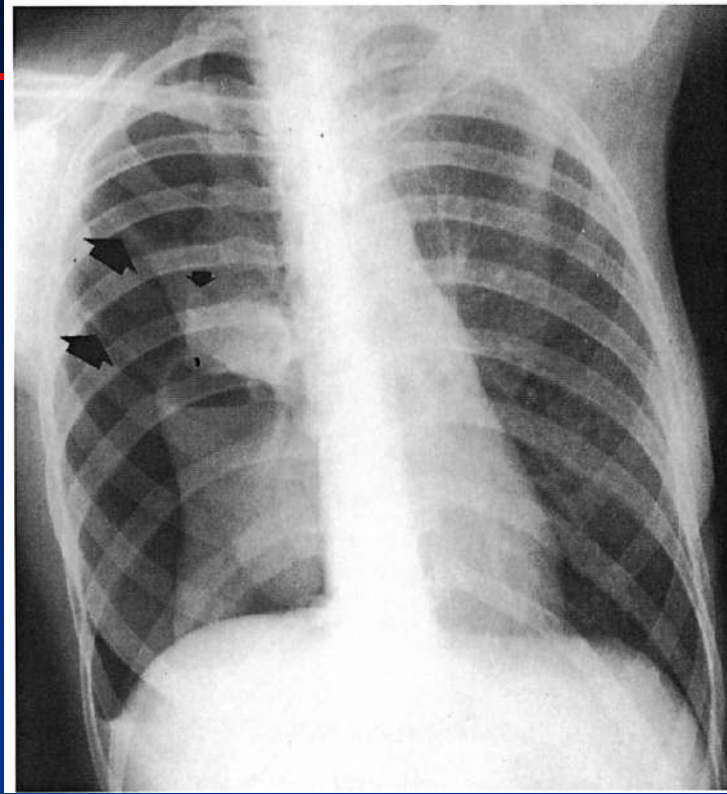






华西放射

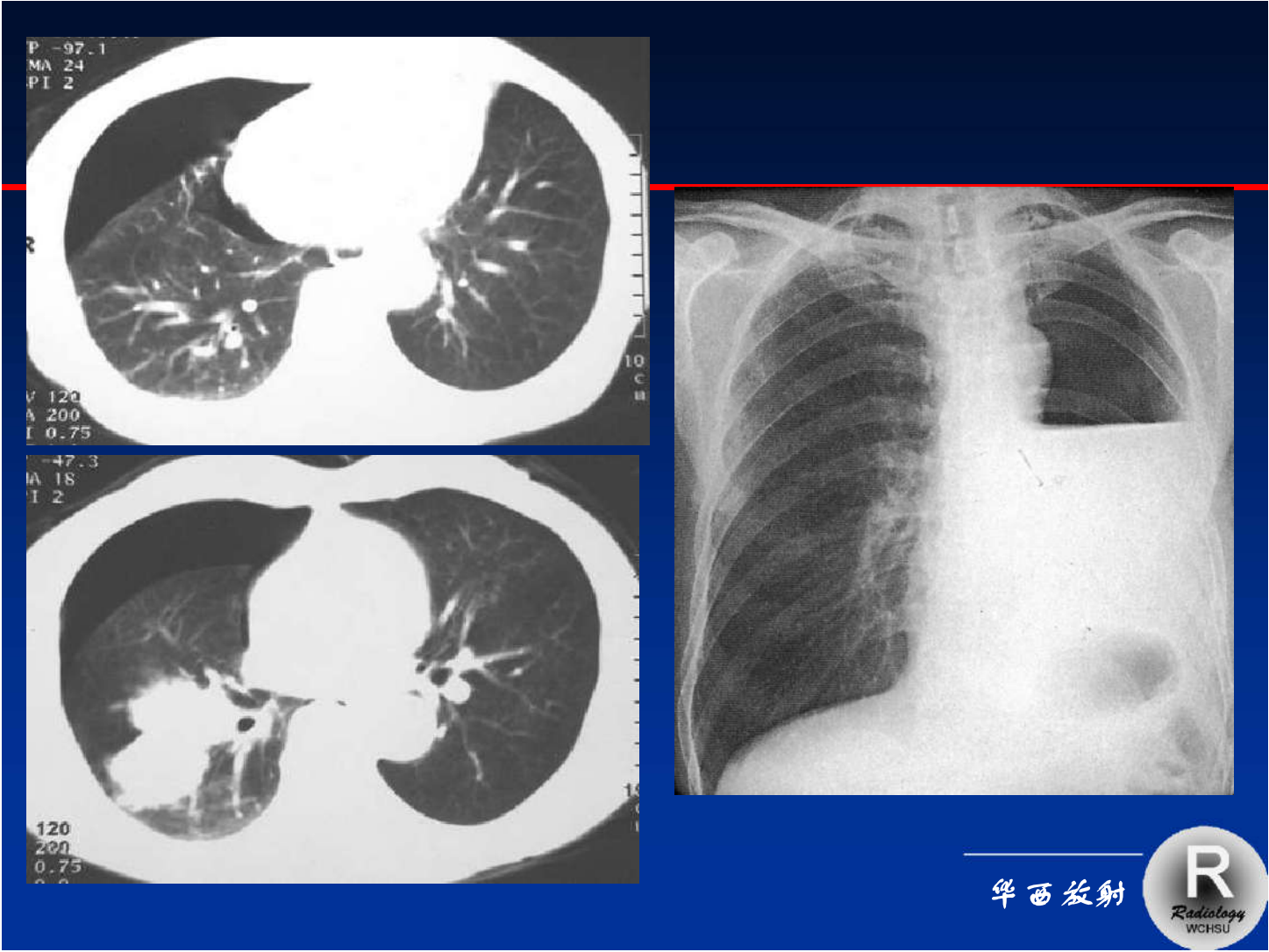




华西放射



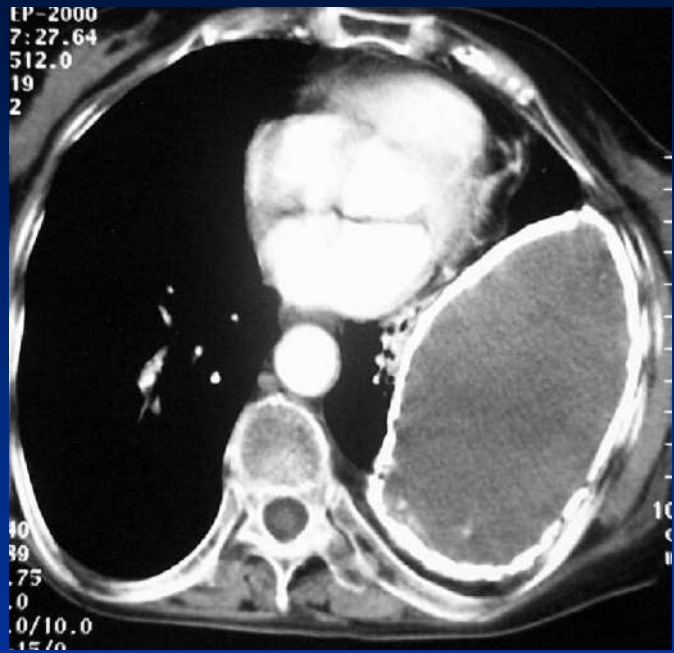
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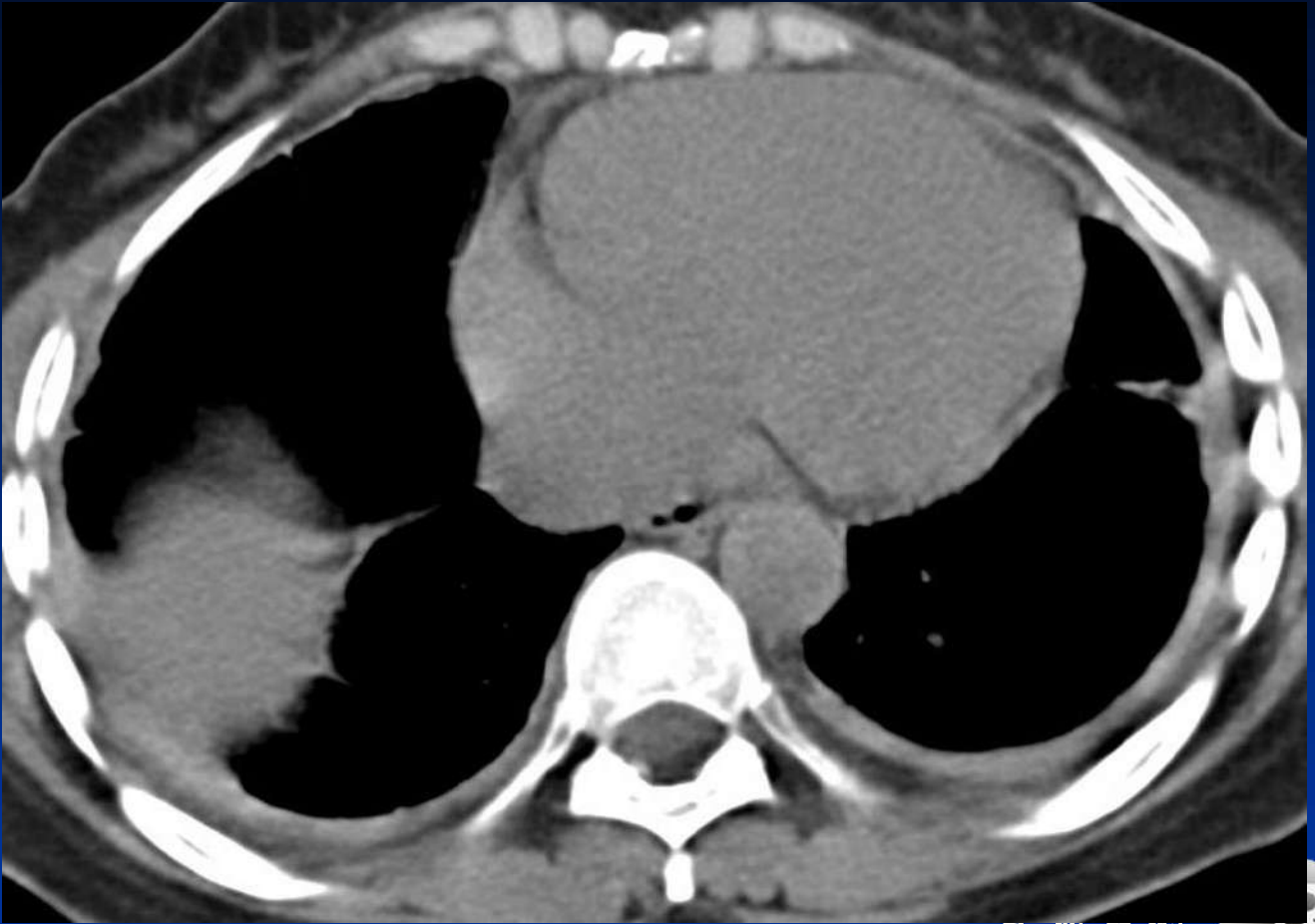
## 三、胸膜增厚、粘连、钙化

- 定义：炎性渗出、肉芽组织增生、出血机化等导致的胸膜厚度增加。
- 表现：
  - 轻度增厚：肋膈角钝，膈动度下降
  - 重度增厚：广泛高密度影，胸廓塌陷，纵隔移向患侧
  - 胸膜钙化：沿肺表面的线状、片状或点状高密度影，形态与肺纹理分布无关。



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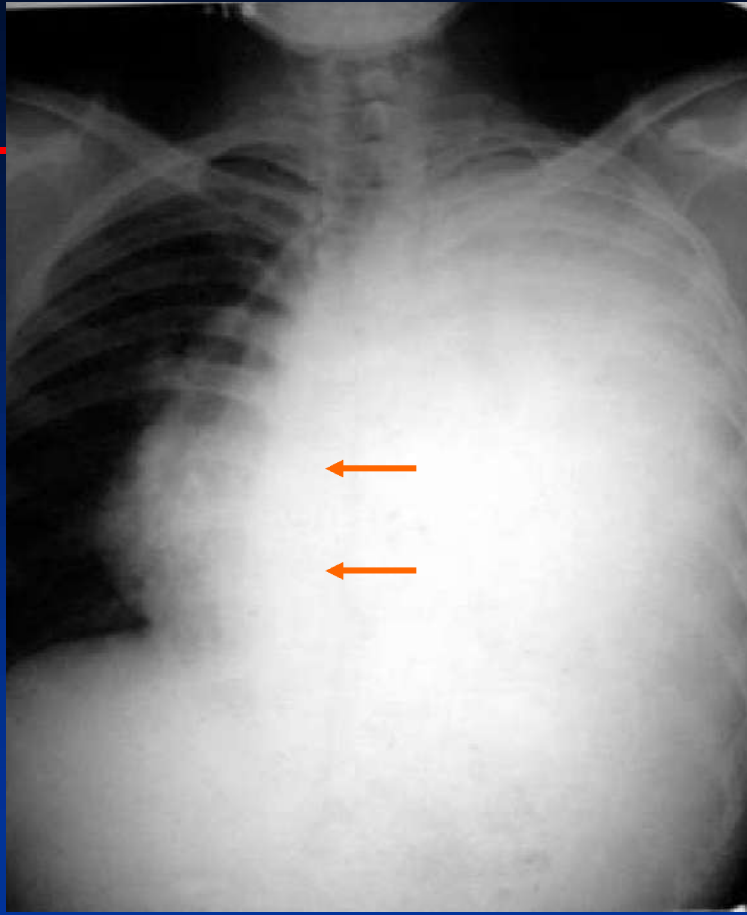
# 纵隔改变

## 胸片表现：

- 1、纵隔增宽：正常轮廓失常，宽度不均匀增加
- 2、纵隔移位：纵隔偏向一侧胸腔

## 原因：

- ✓ 一侧的肺不张
- ✓ 广泛的胸膜增厚、粘连
- ✓ 一侧的大量胸腔积液
- ✓ 一侧的大量气胸

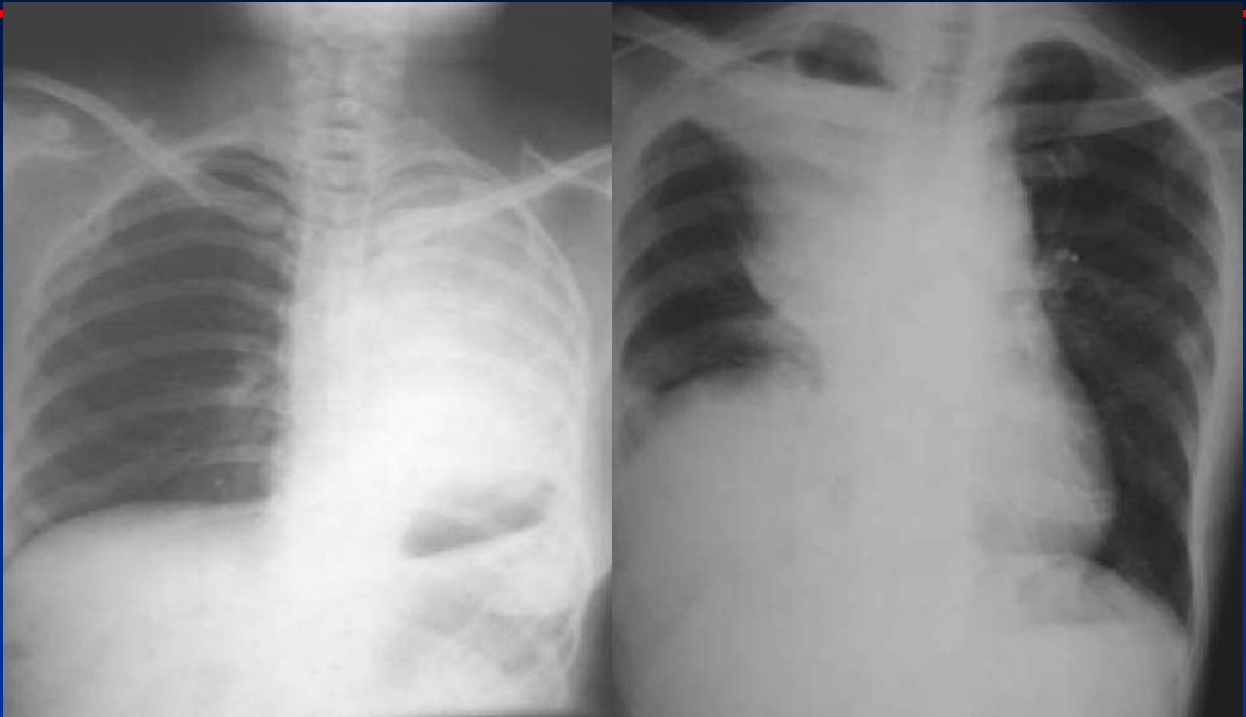


## 纵隔移位

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# 纵隔改变的CT或MRI表现

\* 纵隔内肿块或结节：

大小、位置、密度不定

\* 纵隔不同分区好发肿瘤不同

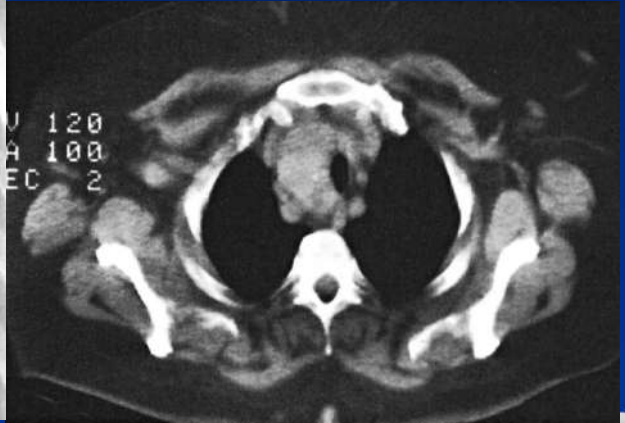
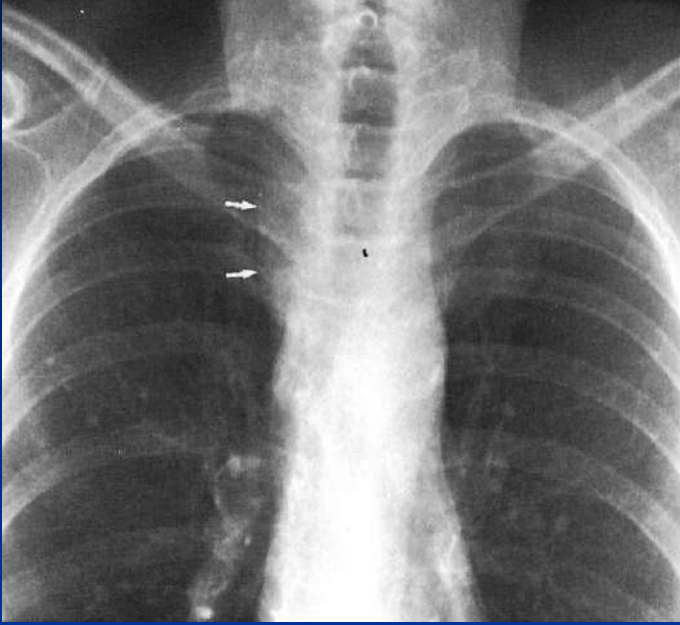
\* 良恶性纵隔肿瘤表现不同

边缘、形态、密度均匀度，  
与大血管的脂肪间隙不同

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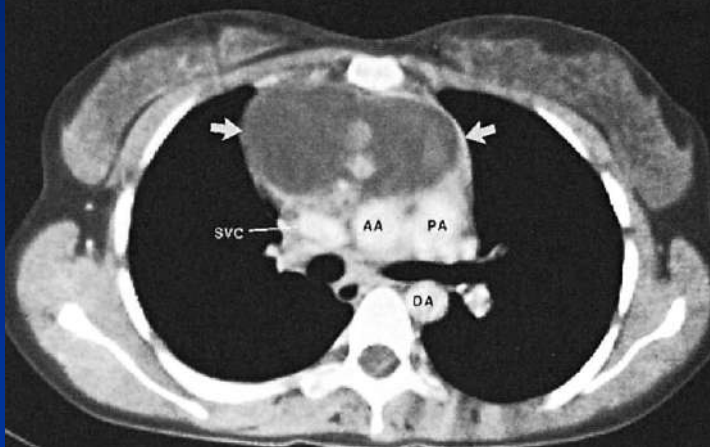
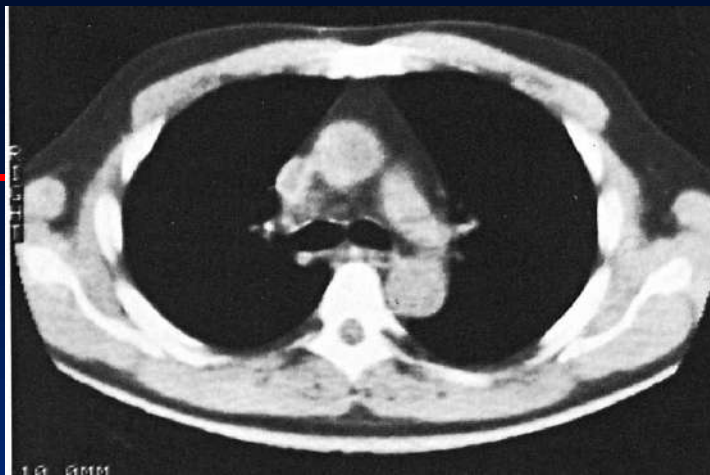
# 纵隔增宽



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# 纵隔增宽



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