

## Solitary Pulmonary Nodule

defined as a lesion smaller than 3 cm;

- anything bigger is a MASS

the skill is to know WHEN to investigate

**50% are malignant!**

**assume cancer until proven otherwise**

## DIFFERENTIALS:

### **Malignancy**

- **Primary cancer**
- **Metastatic deposit**

- irregular, lobulated, or spiculated borders

10% of malignant nodules demonstrate calcification

- calcification in cancer is **STIPPLED** or **ECCENTRIC** (i.e. one side more calcified than another)

### **Benign neoplasm:**

- **Hamartoma** -popcorn calcifications
- **Lipoma**
- **Fibroma**

- well-circumscribed smooth borders
- calcification is more likely than with cancer!
- diffuse, central, laminar, concentric, and maybe with popcorn calcifications.

- **GENERAL RULE:**

**Order = benign**

**Chaos = malignant**

### **Vascular Lesion**

- **Arteriovenous malformation** – usually has a visible vessel entering it

### **Infection**

- **Aspergilloma** – round mass within a cavity, maybe with pleural inflammatory reaction
- **Bacterial abscess** – cavitating with a fluid level and regular thin walls

**Infectious Granuloma** – calcification, when present, is mainly central

- **Tuberculosis or Atypical mycobacteria** –commonly calcified,
- **Histoplasmosis** –commonly calcified

### **Non-infectious Granuloma**

- **Rheumatoid nodule** –peri-pleural nodules or pleural plaques; may cavitate but never calcify
- **Wegener's granulomatosis:** systemic vasculitis of medium and small arteries, venules, arterioles, and occasionally larger arteries – typically, opacities with walls and irregular shaped borders
- **Sarcoidosis** –soft fluffy lesion

### **Congenital lesion**

- **Bronchogenic cyst** –sharply demarcated opacity without fluid level

### **Other problem**

- **Hematoma** widening of the mediastinum, abnormal aortic contour, deviation of the trachea
- **Bronchiolitis obliterans** usually with atelectasis- just a very thick bronchial wall
- **Mucoid impaction** – a bronchus ending abruptly in a mucus plug
- **Massive Pulmonary Embolus** a pulmonary artery ending abruptly in an opacity, and no vascular markings in the lung which is supposed to be supplied by that artery
- **Pulmonary infarction** - wedge-shaped
- **Pleural adhesion** usually seen, duh- at the pleura

### **INTERPRETATION DEPENDS ON HISTORY!**

**Risk of malignancy increases with age**

- Risk of 3% at age 35-39 years
- Risk of 15% at age 40-49 years
- Risk of 43% at age 50-59 years
- Risk of greater than 50% in patients older than 60

**Smoking history ,**

**- AND BEING MALE!**

**Prior history of malignancy**

**Previous history of tuberculosis or pulmonary mycosis**

**Travel history –**

- Travel to areas with endemic mycosis (eg, histoplasmosis, coccidioidomycosis, blastomycosis)
- Travel to areas with a high prevalence of tuberculosis

**Occupational risk factors for malignancy**

Exposure to asbestos, radon, nickel, chromium, vinyl chloride, and polycyclic hydrocarbons

**HAVE TO LOOK AT PREVIOUS FILMS!!**

**ANY CHANGE IS ABNORMAL**

**GROWTH OF NODULE: it's a sphere, so...**

**26% increase in diameter = one doubling in volume**

**BENIGN** lesions take the longest: 400 days or more

**CANCER:** doubling time of 20-400 days.

**INFECTION, INFARCTION, and METS** double in 20-30 days

**CT WITH CONTRAST** is the next step if you think its cancer. THEN → tissue diagnosis

- If youre lucky, PET scan for increased uptake
- Possibly, FNA (unless emphysema, bullae, or nodule is very deep)
- Possibly, Bronchoscopy (if adjacent to major bronchus)
- Possibly , Thoracoscopy or Mediastinoscopy (if lesion is @ the pleura or mediastinum)

