

# **Pulmonary conditions of surgical :importance**

## **:A. pulmonary hydatid disease**

**Life cycle:** the adult parasite is a small tape worm called (Taenia Echinococcus), of two species the 1<sup>st</sup> most common type called Echinococcus granulosus and the 2<sup>nd</sup> less common called Echinococcus multilocularis, the adult parasites in the alimentary tract of the dog shed ova that excreted in the dog feces, this eggs will contaminate the sheep food and then through the portal circulation the hatched eggs reach the liver and through the systemic circulation they will reach every point of the sheep body predominantly in the lungs and spleen where the parasites develop into the larval stage that called hydatid cyst. when infested sheep slaughtered and its entrails are eaten by the dog then the life cycle of the parasite is completed, the human being getting infested when eat a food contaminated with the dog feces, the egg reach and hatched in the digestive system and through the venous portal circulation most of the parasites reach the liver and develop into a cyst, some of them escape the liver and lodge in the lungs to form one or more .hydatid cyst

**Components of the cyst:** like any other cyst it consists of fluid surrounded by a wall, the fluid consist predominantly of water with some swimming capsules :and scolices, while the wall formed by 3 layers

**germinal layer:** the innermost layer, the reproductive part of the parasite that .1  
.contain the scolices which are the head of adult warm

**laminated layer:** the middle layer which is white hyaline membrane surround and .2  
.protect the germinal layer

**adventitial layer:** also called pericyst or capsule, it is just the compressed .3  
adjacent parenchymal tissue and the host granulation tissue reaction that form thin  
.fibrous layer

### **:Clinical features**

.1 asymptomatic: discovered accidentally when do chest x-ray for other reason  
.2 symptomatic: cough and hemoptysis with constitutional symptoms when getting  
infected, dyspnea and chest pain due to pressure effect, if ruptured the patient may  
come with severe asphyxiation, hypersensitivity or anaphylactic shock, some patient  
.may have features of complicated cyst with abscess or empyema

### **:Radiological features**

.1 intact cyst: well defined homogenous opacity of fluid density with little or no  
.surrounding pulmonary parenchymal reaction  
.2 peri-vesicular pneumocyst: (signet ring appearance), meniscus sign or air crescent  
sign due to adventitial rupture so air appear between the adventitia and laminated  
.layer

water-Lilly or camalote sign: cyst with collapsed laminated membrane floating in .3  
 .the fluid (ruptured hydatid cyst)  
 .lung abscess with air-fluid level .4  
 empty pulmonary cavity, when the laminated layer or ruptured cyst is completely .5  
 .coughed up  
 .pleural effusion or empyema .6  
 Cumbo"s sign (double arc sign or onion peel appearance), in lateral decubitus .7  
 chest x-ray the air in the cyst and the air that escape between the adventitia and the  
 .laminated layer will form a double air shadows  
 air bubble sign, when air dissect between the laminated and adventitial layer due .8  
 .to erosion of the bronchioles by expanding cyst, it is an early sign of rupture  
 serpentine sign, in lateral chest radiography the collapsed laminated layer may .9  
 .appear as intracystic serpentine linear structure  
 mass within a cavity, the collapsed membrane may appear in lateral decubitus .10  
 .view as a mass in a cavity

## **:Treatment**

**medical treatment:** there is no curative medical treatment, it may be indicated in .1  
 multiple disseminated pulmonary hydatid cysts, patient not surgical candidate, and  
 .in post-operative period in ruptured cyst, the drugs used are  
 A. Albendazole in a dose of 10-12mg/kg/day, in a course of more than 3 months,  
 used alone or after surgery, the patients need frequent checking of pulmonary  
 .function  
 B. Praziquantel it given in a dose of 40mg/kg every week in concomitant with  
 .Albendazole treatment

**surgery:** the aim of surgery is to remove the cyst without spillage of its content, .2  
 resection of atelectatic lung tissue, closure of the fistulae, achieve adequate aero  
 :and hemostat and allow full lung expansion. The types of surgical procedures are  
 .inoculation: to remove the cyst intact .1  
 injection, aspiration and evacuation technique, when the cyst is giant and under .2  
 tension with high risk of rupture with inoculation procedure, so inject scolicidal  
 agent then aspirate the cystic fluid after 5-10 minutes, then open the cyst and  
 .evacuate the layers and remaining fluid  
 .wedge resection, when the cyst is small and peripheral .3  
 segmentectomy, lobectomy or pneumonectomy, when the cyst or cysts .4  
 occupying most of or the whole anatomical unit or rupture and recurrent infection  
 .that destroyed most of the anatomical unit

## **:B. Surgical treatment of pulmonary tuberculosis**

## **:Indications**

- massive or recurrent hemoptysis, surgery for removal of the source of bleeding .1
- ."the part of lung parenchyma
- .broncho-pleural fistula .2
- .open cavity and positive sputum that resist treatment for 3-6 months .3
- .tuberculous bronchiectasis .4
- suspected malignancy, as tuberculosis and malignancy may co-exist, or carcinoma .5
- .may arise on tuberculous scar
- .trapped lung syndrome, after chronic empyema .6
- .recurrent hemoptysis secondary to pulmonary mycetoma .7
- residual destroyed segment, lobe or lung, or cavity or tuberculoma, as anti- .8
- .tuberculous drugs cannot penetrate dense fibrous tissue in sufficient concentration

## **:Type of surgery**

- anatomical pulmonary resection: segmentectomy, lobectomy and .1
- .pneumonectomy
- decortication with or without pulmonary resection, decortication is to remove .2
- .thickened and adherent visceral and parietal pleura

## **:Complications**

- .tuberculous broncho-pleural fistula .1
- .bronchogenic spread of tuberculosis .2

## **:Contraindications**

- A. impaired cardiac function
  - b. insufficient respiratory reserve
  - c. debilitated patient
- Usually surgery is postponed for 3-6 months after the initiation of anti-
- .tuberculous therapy