‘Double – arch’ sign and ‘Air – bubble’ Sign – Two Radiological Signs of Ruptured Hydatid Cyst in Lung

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A fifty five year old male presented with episodes of scanty haemoptysis for two days, cough with expectoration for last four years. Chest X – ray (CXR), posteroanterior view showed a homogeneous rounded opacity in left lower zone, and absolute eosinophil count was 1,200/ µL. Contrast enhanced computed tomography (CECT) scan of thorax showed a mass – like lesion in left lower lobe with air pockets within the lesion – the ‘air – bubble’ sign (Figure 1). Previous CXR of 6 months back revealed a cystic lesion with air – fluid level within it in the left lower zone, which was capped with a crescent of air – bubble sign or Cumbo’s sign, another radiological sign which is pathognomonic for ruptured hydatid cyst (Figure 2). Anti – echinococcal IgG antibody was highly positive, i.e., 32.45 U/mL (normal value: < 8 U/mL, ELISA method).

Hydatid disease is caused by a parasite, *Echinococcus granulosus*. The diagnosis of echinococcosis is generally made on the basis of clinical history and pathognomonic radiological findings. Hydatid antigen specific IgG is the most sensitive and specific test for the diagnosis of pulmonary echinococcosis (83.5% and 99.5% respectively).1 But diagnosis of ruptured hydatid cyst is difficult because of variable and atypical radiological pictures, sometimes mimicking malignancy. Among different radiological signs of ruptured hydatid cyst, crescent or meniscus sign, double arch or Cumbo’s sign, water lily sign or sign of camelot, daughter cyst or rising sun sign, serpent sign, Monod’s sign, air – bubble sign are important. In our case, initial rupture of pericyst resulted in collection of air between endocyst and pericyst producing meniscus sign; later on, as volume of air was increasing, shrinking cyst ruptured and fluid came out, simultaneously air entry occurred within the cyst resulting in development of air – fluid level which was capped by air crescent between endocyst and pericyst. This sign, called ‘double arch’ sign or Cumbo’s sign is almost diagnostic of ruptured hydatid cyst,

Fig. 1 : CECT thorax showing a mass lesion in left lower lobe with multiple air pocket within it – ‘Air – Bubble’ Sign

Fig. 2 : CXR – PA view showing a cystic lesion with air – fluid level within it in left lower zone, capped with a crescent of air – ‘Double Arch’ Sign
but is rarely described. Subsequent erosion of the bronchiole by the cyst led to dissection of air between pericyst and parasitic membrane. This is represented as ‘air – bubble’ sign on CECT thorax. This sign is 85% sensitive and 96% specific in the diagnosis of ruptured hydatid cyst in the lung.4

References


