

Radiology Quiz

Luftsichel sign

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A 60-year-old male smoker was admitted with the chief complaints of cough, dyspnea and loss of appetite and weight. Skiagram chest revealed a left hilar shadow and a band of hyperlucency outlining the arch of aorta [Figure 1]. The left lung volume was reduced. Higher imaging in the form of contrast-enhanced computed tomography (CECT) of the chest showed collapse of the left upper lobe with

abrupt ending of the left upper lobe bronchus [Figure 2]. Flexible bronchoscopy revealed left upper lobe growth, which on histopathologic examination of the biopsy specimen proved to be small cell carcinoma.

- Q1. Can you name the radiologic sign?
Q2. Can you explain its occurrence?

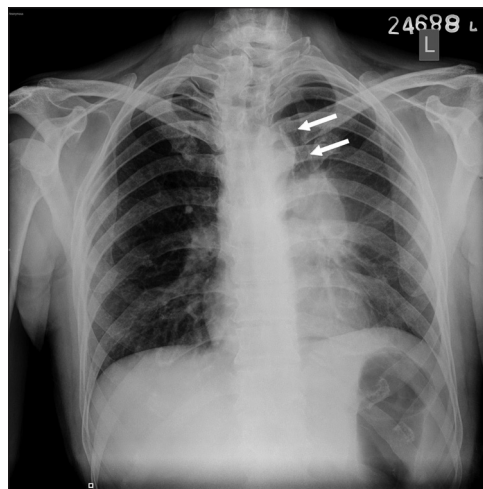


Figure 1: Chest radiograph of the patient reveals left hilar shadow, left lung volume loss and a hyperlucent band along the arch of the aorta (arrows)

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Quick Response Code: 	Website: www.lungindia.com
	DOI: 10.4103/0970-2113.92373

ANSWERS

- A. The chest radiograph and CECT showed a positive luftsichel sign.
- A. There was also hyperinflation and invagination of the superior segment of the left lower lobe into the medial portion of the collapsed left upper lobe [Figure 2].

DISCUSSION

Collapse of lung may present in varied combinations of direct and indirect signs. One such indirect sign is the luftsichel sign. Luftsichel is a German word that means air crescent (luft means air, sichel means sickle). It is seen in upper lobe collapse, more commonly left upper lobe rather than the right.^[1] This sign is seen on a posteroanterior chest roentograph as a hyperlucent shadow extending from the apical lobe to the superior pulmonary vein sandwiched between the aorta medially and the medial aspect of the collapsed left upper lobe laterally. The left lung has one major fissure and two lobes. When it collapses it moves in the anterior and superior direction to lie almost parallel to the anterior chest wall.^[2] Thus, the posterior empty space is filled by the hyperexpanded superior segment of the lower lobe, which gives rise to the hyperlucency. The collapsed segment is tethered by the bronchus, left pulmonary artery and superior pulmonary vein.^[3] Along with this sign other direct and indirect signs of collapse will be evident. The direct signs include displacement of fissures, loss of aeration and crowding of vessels. Indirect signs such as shift of trachea, mediastinal shift, rib crowding, compensatory overinflation of the remaining lung and hilar displacement may also be visualized.^[4]

The differential diagnosis for luftsichel sign includes herniation of the right lung and mediastinal pneumothorax. Right lung herniation occurs in left lung collapse. Left lung collapse causes mediastinal shift and also shift of aorta to the left. Right lung herniates behind the sternum to fill the space and it produces a parasternal hyperlucency. However, in luftsichel sign there is para-aortic lucency.



Figure 2: Contrast-enhanced computed tomography chest mediastinal window at the level of arch of aorta shows collapse of left upper lobe with a shift of major fissure (thick arrow). The superior segment of the left lower lobe has hyperinflated and invaginated the medial part of left upper lobe (thin arrow)

Mediastinal pneumothorax can be differentiated from luftsichel sign. There would be no other signs of collapse and there may be pneumothorax or subcutaneous emphysema accompanying it.

CONCLUSION

Collapse of a lobe of lung is significant because it may indicate endobronchial pathology and the need for bronchoscopy.

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How to cite this article: Singh S, Singh N, Tikkiwal S. Luftsichel sign. *Lung India* 2012;29:83-4.

Source of Support: Nil, **Conflict of Interest:** None declared.