

A solitary lung mass in a 46-year-old man

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CASE REPORT

A 46-year-old man with a 15 pack-year smoking history was referred to the pulmonary clinic with an incidental finding of a left pleural-based lung mass on chest X-ray (*figure 1*). The patient denied any respiratory symptoms, loss of weight or night sweats. He reported to have worked in a shipyard with a history of prolonged exposure to asbestos. Physical examination revealed no evidence of respiratory distress and no other abnormalities. A contrast-enhanced computed tomography (CT) scan of the chest followed which confirmed the X-ray findings (*figure 2*).

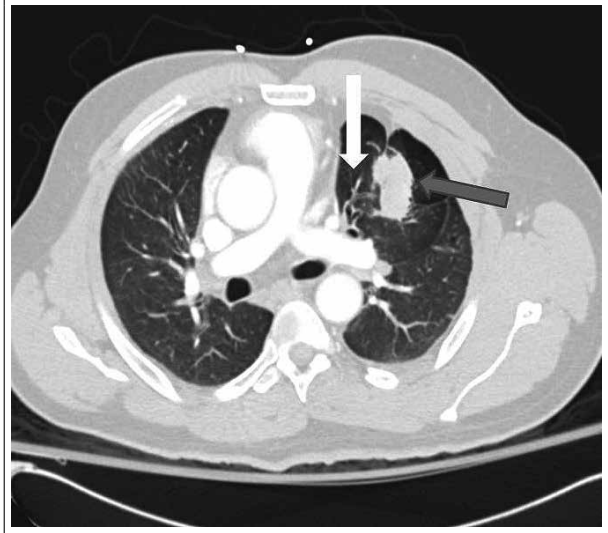
WHAT IS YOUR DIAGNOSIS?

See page 101 for the answer to this photo quiz.

Figure 1. Chest X-ray showing pleural based mass in left lung (arrow)



Figure 2. Chest CT demonstrating a mass, (grey arrow), with converging bronchovascular bundle towards it, known as comet tail sign (white arrow)



ANSWER TO PHOTO QUIZ (PAGE 97)

A SOLITARY LUNG MASS IN A 46-YEAR-OLD MAN

DIAGNOSIS

A chest CT scan revealed calcified pleural plaques, and an ovoid opacity within the left upper lobe subjacent to a pleural plaque (arrows) is also seen with swelling of the adjacent bronchi and vessels, all of which led to a diagnosis of rounded atelectasis. Crowding of vessels and bronchi close to it is referred to as the 'comet tail' sign, which is pathognomic of this entity. A subsequent positron emission tomography (PET) scan (figure 3) of the chest revealed only mild uptake of 18F-fluorodeoxyglucose, establishing the benign nature of the mass.

Rounded atelectasis represents an unusual form of lung collapse that occurs adjacent to the scarred pleura, which can be easily mistaken for lung cancer. It has been referred to as Blesovsky syndrome, atelectatic pseudotumour and shrinking pleuritis with atelectasis.¹ Two theories are postulated to explain the formation of rounded atelectasis: the favoured one by Schneider and Dernevik *et al.* suggests that the underlying event is a local pleuritis caused by irritants such as asbestos. The pleura then contracts and thickens, with shrinkage of underlying lung, and atelectasis develops in a round fashion. The other theory postulated by Hanke *et al.* suggests that in an area of pleural effusion, regional lung becomes adherent to the parietal pleura and interlobar fissure. As the fluid resolves, the more central lung expands, leaving the peripheral lung adherent to the pleura, atelectatic and rolled into a round configuration.²

Rounded atelectasis is almost always asymptomatic and a history of asbestos exposure is seen in 70% of cases.² However, tuberculosis, pulmonary infarction and malignancy have been implicated in its formation.¹ CT scan features of rounded atelectasis are characteristic, which include a rounded peripheral lung mass, most dense at the periphery that is not completely surrounded by lung. The mass forms an acute angle with the pleura and adjacent pleural thickening is always seen. Air bronchograms may also be present within the mass. The characteristic feature of round atelectasis is the comet tail sign, which describes the crowded and converging bronchovascular bundles entering the mass from all sides. An estimated 50% cases of rounded atelectasis are not detected by chest X-rays. Most authorities agree that CT is an almost perfect tool for confident diagnosis, accurate enough to obviate exploratory or resectional thoracotomy most of the time. However, only one study has addressed this matter systematically which concluded that the comet tail sign is the most reliable sign for diagnosis (sensitivity of 83% and specificity of 92%). Newer

Figure 3. PET scan showing left lung mass with no uptake of 18 F-fluorodeoxyglucose



FDG-PET techniques, such as dual time-point FDG-PET, hold promise for even greater diagnostic accuracy (100% sensitivity, 89% specificity). PET scan is mainly useful to differentiate rounded atelectasis from malignant lesions when CT is equivocal. The main differential to this entity is bronchogenic carcinoma; however the characteristic imaging features of rounded atelectasis make other tests unnecessary. No specific treatment is needed for rounded atelectasis and they occasionally disappear spontaneously.² Rounded atelectasis per se is not a pre-neoplastic lesion.³ In a series of 74 patients with rounded atelectasis, followed over 16 years, none turned out to be malignant.⁴ However, considering it develops as a sequelae of exposure to a known carcinogen, such patients should be subjected to a close follow-up.³

Thus, we reiterate the importance of knowledge of this benign entity to the general internist as it can avoid unnecessary tests and concern to the patient.

REFERENCES

1. Thachil RT, Krishnan P, Lapidus C. Rounded Atelectasis. Clin Pulm Med. 2002;9:66-7.
2. Partap VA. The comet tail sign. Radiology. 1999;213:553-4.
3. Stathopoulos GT, Karamessini MT, Sotiriadi AE, Pastromas VG. Rounded atelectasis of the lung. Respir Med. 2005;99:615-23.
4. Hillerdal G. Rounded atelectasis. Clinical experience with 74 patients. Chest. 1989;95:836-41.