A young smoker with hemoptysis

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ABSTRACT

A young man presented with complaints of dry cough, right lower chest pain, and streaky hemoptysis for duration of 3 months. A nonresolving opacity on chest radiograph and mass-like consolidation on computed tomography (CT), led to biopsy of the mass under CT guidance. Histopathology provided the diagnosis. The radiological features were retrospectively evaluated.

KEY WORDS: Hemoptysis, melting sign, pulmonary infarct

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A 35-year-old man presented with complaints of dry cough, right lower chest pain, and streaky hemoptysis off and on for duration of 3 months. There was no history of fever, anorexia, or weight loss. He was a smoker with smoking index of 5-6 per day for 5-6 years. The general and respiratory system examination was unremarkable. The routine hematological and biochemical investigations were within normal limits. Radiograph of the chest demonstrated presence of a well-defined opacity in right lower zone. A contrast-enhanced computed tomography (CT) was done followed by biopsy under CT guidance. Histopathology provided the diagnosis.

QUESTIONS

Q1: The serial radiographs of chest in posteroanterior projection are provided [Figure 1]. What are your findings on chest radiograph? What is this sign called?

Q2: What are the findings on CT? [Figure 2]

Q3: What is your probable diagnosis?

Q4: What should be the next investigation?

Figure 1: Radiograph of chest in posteroanterior projection, magnified images of right lower zone. Radiograph on presentation (a), after 1 week (b) and 1 month (c)
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**ANSWERS**

**Answer 1**
There is a relatively well-defined opacity in right lower zone. On serial chest radiographs, there is reduction in the size of the opacity with maintenance of its configuration. This sign is called “Melting Sign.”

**Answer 2**
There is a peripheral subpleural convex consolidation in apical segment of right lower lobe with presence of central lucencies (curved arrow) and absence of air bronchogram within. There is an enlarged vessel leading to the apex of consolidation (straight arrow).

**Answer 3**
On the basis of chest radiograph and CT findings, diagnosis of pulmonary infarct is highly likely.

**Answer 4**
Contrast-enhanced pulmonary angiography to look for pulmonary thromboembolism.

Pulmonary angiography done in this patient did not show direct arterial signs of thromboembolism [Figure 3]. Some of the peripheral branches supplying the apical segment of right lower lobe were attenuated in caliber and showed reduced enhancement [Figure 4] consistent with chronic thromboembolism.

**DISCUSSION**

Melting sign \(^1\) presents an important roentgenologic finding in the identification of resolving pulmonary infarction. A pulmonary infarct resolves by reduction in the size of the opacity with maintenance of its basic configuration. There is resorption of its perimeters with maintained pleural base. Traditionally, this sign has been used in differentiating pulmonary infarct from acute infective or inflammatory processes, which demonstrate a gradual patchy resolution. This sign may also be used in differentiating from malignant process, which may show progression depending upon the growth of tumor.

A wedge-shaped peripheral opacity on CT is a nonspecific imaging finding which may be observed in acute or...
organized pneumonias, malignancy, lymphoma, Wegener's granulomatosis, and many other uncommon diseases like sarcoidosis, radiation pneumonitis, and so on. A study by Revel et al.,[2] established that peripheral opacities on CT due to pulmonary infarct can be differentiated from other causes, based on presence of central lucencies, absence of air bronchograms, triangular shape of consolidation, and the vessel sign. According to the study, the presence of central lucencies within a peripheral consolidation had a specificity of 98% and sensitivity of 46% for pulmonary infarction.

A contrast-enhanced CT angiography should be subsequently done if findings on chest CT are consistent with pulmonary infarction. Although the diagnosis of acute thromboembolism is based on direct arterial findings, it is important to realize that these findings may be missing when CTA is delayed relative to clinical onset. In the present case also, Computed tomopgraphy Angiography (CTA) was delayed and provided only indirect evidence of thromboembolism. Recognition of pulmonary infarct on CT in these situations is of utmost importance.

In the present case, biopsy was performed under CT guidance in view of patient’s history of hemoptysis and smoking, absence of fever, and nonresolving opacity on chest radiograph with mass-like consolidation on CT. The imaging findings were not prospectively identified for presence of pulmonary infarct. The tissue obtained from biopsy under CT guidance [Figure 5] led to the diagnosis of pulmonary infarct. A similar case of pulmonary infarct in a 48-year-old smoker has also been reported by Miniati.[3]

CONCLUSION

The application of melting sign on chest radiograph and characteristic imaging findings on CT may lead to the identification of accurate diagnosis of pulmonary infarct, avoid unnecessary investigations, and guide appropriate clinical workup, even in situations where clinical presentation and physical findings are atypical to preclude prior diagnosis.

REFERENCES

1. Woesner ME, Sanders I, White GW. The melting sign in resolving transient pulmonary infarction. Am J Roentgenol Radium Ther Nucl Med 1971;111:782-90.
2. Revel MP, Triki R, Chatellier G, Couchon S, Haddad N, Hernigou A, et al. Is it possible to recognize pulmonary infarction on multisection CT images? Radiology 2007;244:875-82.
3. Miniati M. A 48-year-old man with a pleural-based consolidation. CMAJ 2013.

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