An unusual cause of “reverse batwing” sign

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CASE SUMMARY

A 55-year-old male patient with a history of systemic hypertension, chronic obstructive pulmonary disease with 20 pack-year smoking history, obstructive sleep apnea was admitted for evaluation of progressive shortness of breath of 15 days duration, associated with productive cough of yellowish sputum. On presentation, he was afebrile and had an oxygen saturation of 89% with 2 L of oxygen per minute. Physical examination revealed bilateral rhonchi and crackles mainly on auscultation of the right side of the chest. Laboratory results were insignificant for a normal white blood cell count. Electrocardiogram was normal, and bedside two-dimensional echocardiography showed no evidence of heart failure or wall-motion abnormalities. Chest X-ray showed bilateral upper zone nonhomogeneous opacities suggestive of pneumonia [Figure 1a].

The patient was previously evaluated for lower respiratory tract infection. Computed tomography (CT) of the chest [Figure 1b] done 2 months back showed bilateral peripheral, ill defined, sub-pleural lesions. The patient was treated with broad-spectrum antibiotics and due to inadequate response, he was advised video-assisted thoracoscopic surgery biopsy of the lung to rule out interstitial/eosinophilic lung disease, but the patient refused then.

Consequently, the patient was admitted to the hospital in view of progressive dyspnea and development of respiratory failure, and repeat contrast enhanced CT of the chest with pulmonary artery angiography [Figure 1c] showed peripheral sub-pleural consolidation with no enhancement in bilateral lung fields (the reverse batwing appearance) with no evidence of pulmonary thromboembolism. Sputum culture did not grow any organism, and there was no evidence of malignant cells seen.

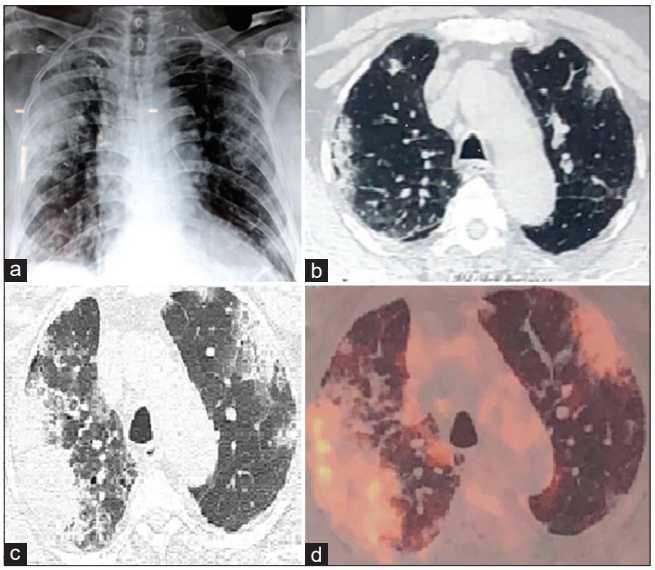

Figure 1: (a) Chest X-ray at the time of presentation. (b) Computed tomography CHEST 2 months before the present admission. (c and d) Computed tomography and positron emission tomography computed tomography at the time of present admission showing reverse batwing appearance

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A 18F-fluorodeoxyglucose positron emission tomography with CT [Figure 1d] was done during present admission which showed multiple ill-defined sub-pleural opacities in bilateral lung fields, areas of consolidation noted in both lungs showing radiotracer uptake (SUVmax - 5.6). Areas of air trapping, honey combing, and traction bronchiectasis noted in both lung fields. A few lymph nodes were seen at right para-tracheal, bilateral hilar and sub-carinal region, showing increased radiotracer uptake (SUVmax - 8.0). No other hyper metabolic lesions elsewhere in the body.

Q1. What are the differentials for the reverse batwing appearance?

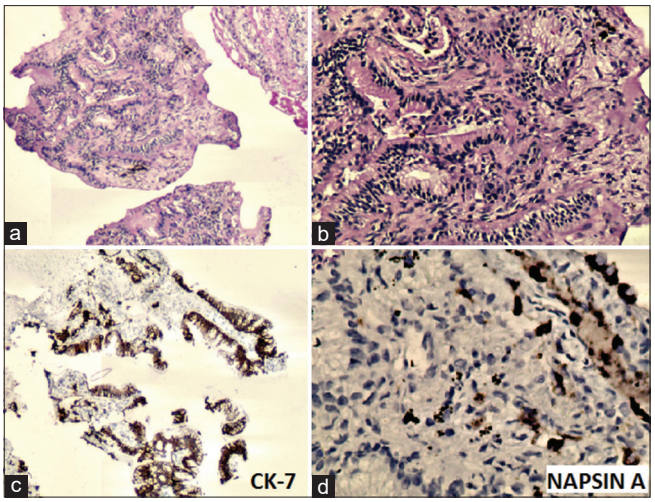

Figure 2: (a and b) Histopathology suggestive of invasive mucinous adenocarcinoma. (c and d) Immunohistochemistry staining positive for CK-7 and NAPSIN a confirming adenocarcinoma

ANSWERS

The CT [Figure 1c and d] shows bilateral, nonsegmental, peripheral opacities that spare the peri-hilar regions (classic photographic negative of pulmonary edema) resembling a "reverse batwing" pattern. It is a relatively unusual appearance with some narrow differentials such as chronic eosinophilic pneumonia (CEP), organizing pneumonia (OP), radiation pneumonitis, lung contusion, vasculitis, and adenocarcinoma of the lung.

A lung biopsy of right consolidation was performed through trans-thoracic approach. Histopathology along with immunohistochemistry [Figure 2] showed positive for invasive mucinous adenocarcinoma of the lung. Molecular diagnostics did not reveal any mutations. Medical oncology opinion was taken for this case and the patient given pemetrexed based chemotherapy.

DISCUSSION

Early recognition and timely diagnosis in lung cancer is often challenging because of wide array of clinical and radiological presentations as well as a variable natural history and disease progression. Although smoking remains a major risk factor for the development of most types of lung cancer, however, there appears to be a rise in the number of diagnosed cases in nonsmokers.[1]

Our case was unique, due to the presence of bilateral, nonsegmental, peripheral opacities that spare the peri-hilar regions (classic photographic negative of pulmonary edema pattern also known as "reverse batwing" opacities), often with an upper lobe predilection which lead to a differential diagnosis of CEP or OP.[2]

Our patient presented with clinical symptoms and radiological findings suggestive of an infectious or inflammatory process. In view of his radiological findings, eosinophilic pneumonia or OP was suspected. However, surprisingly, the lung biopsy revealed invasive mucinous adenocarcinoma.

Due to the presence of pulmonary infiltrations that can mimic an infectious process, adenocarcinoma of the lung is often called the "masquerader" confused with pneumonia, in fact, most of the patients will fail a course of antibiotic treatment before lung adenocarcinoma is diagnosed.[3] Lung carcinoma should be part of the differential diagnosis of any infectious process that is not resolved with maximized antibiotic therapy, as early detection of lung cancer will have a better survival rate.

CONCLUSION

The present case of adenocarcinoma of the lung, presenting with unusual radiological "reverse batwing sign" with such a rapid progression is an uncommon finding. We must be aware of such an unusual presentation, diagnosis of which requires tissue sampling.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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