Primary papillary adenocarcinoma of the lung: Report of two cases

Sir,

We describe two patients of primary papillary adenocarcinoma (PA) of the lung. PA represents an unusual subtype of adenocarcinoma of lung. This subtype has never been reported in Indian literature, to the best of our knowledge.

Primary PA of the lung is a rare malignancy.[1] PA is a subtype of adenocarcinoma of lung in which papillary structures replace the underlying alveolar architecture.[2] True PA is diagnosed when the pathologic features constitute >75% of the tumor on histopathology.[3] A subtype of adenocarcinoma is an important determinant of therapeutic choice for chemotherapy. Detecting PA has prognostic and therapeutic implications in a patient of lung carcinoma. We discuss two cases of primary PA of lung.

Case I is 61-year-old hypertensive male, admitted with complaints of breathlessness and cough for 6 months and chest pain for 3 months. He was a never smoker and did not have any significant personal history.

He was afebrile, hemodynamically stable and oxygen saturation was 93% on room air. Routine hemogram and biochemistry investigations were within normal limits. Arterial blood gas analysis was: pH 7.43, pCO_2 37 mmHg, pO_2 69 mmHg, $cHCO_3$ 38 and SO_2 93%. The chest X-ray PA view showed right upper and right middle lobe consolidation and right lower lobe mass lesion [Figure 1]. A contrast-enhanced computed tomography (CECT) thorax revealed a mass lesion in all segments of the right lower lobe, dense alveolar consolidation with air bronchogram in posterior segment of right lower lobe and right middle lobe, multifocal consolidation in right

upper lobe and smooth contoured nodules in the left lower lobe [Figures 2 and 3].

Case II is a 58-year-old male, admitted with a cough associated with scanty expectoration for 6 months and low-grade fever and hemoptysis for 2 months. Like the previous patient, he was a never smoker and had no significant past and personal history.

He was febrile with temperature 100.4°F, and oxygen saturation was 93% on room air. Hemogram showed a raised total leukocyte count of 14,400. Routine biochemistry investigations were within normal limits. Arterial blood gas analysis was: pH 7.39, pCO_2 42 mmHg, pO_2 74 mmHg, cHCO3 28 and SO_2 95%. The chest X-ray PA view showed patchy consolidation of the right middle and right lower zone and left lower zone.

A CECT thorax revealed multifocal consolidation of superior and lateral segments of left lower lobe and anterior, superior, and posterior segments of right lower lobe [Figure 4]. The consolidation patch abutting the pleura of the lateral segment of left lower lobe had cavitated [Figure 5].

Both the patients underwent a Fiberoptic Bronchoscopy which did not reveal any endobronchial abnormality. Bronchoalveolar lavage was sterile. Antinuclear antibody and anti-neutrophil cytoplasmic antibodies titers were within normal limits, and purified protein derivative test was negative.

Computed tomography-guided biopsy was done from dense consolidation in both patients.

In Case I, histopathology revealed a tumor dispersed in irregular glandular and papillary architecture. The glands were lined by columnar cells displaying loss of polarity, moderate nuclear polymorphism, hyperchromatic nuclei, prominent nucleoli, and vacuolated cytoplasm. Concentric calcification forming psammoma bodies were present.

In Case II, histopathology revealed tumor displaying papillary and micropapillary architecture. The papillas were lined by round to oval cells with hyperchromatic nuclei, fine chromatic and conspicuous nucleoli.

A thyroid primary was excluded by ultrasonography and fine-needle aspiration cytology. A metastatic workup was done with CECT head and abdomen and did not reveal any other lesions. Immunostaining with thyroid transcription factor-1 (TTF-1) was positive in both the cases.

Lung cancer is the most common cancer worldwide.[4] Adenocarcinoma is the most common type of lung cancer, and its incidence is increasing worldwide.[5] The major

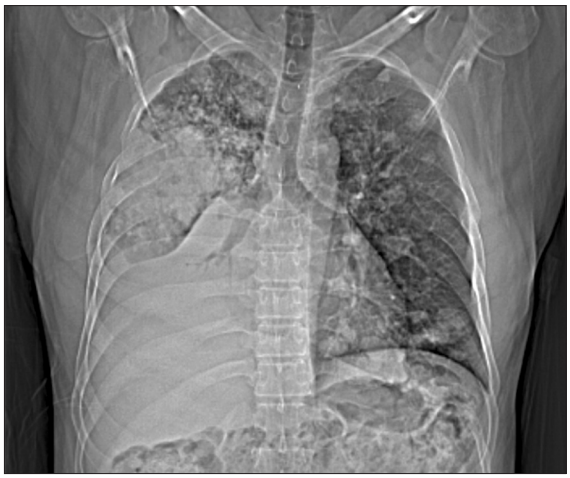

Figure 1: Chest X-ray papillary adenocarcinoma view showing mass with consolidation

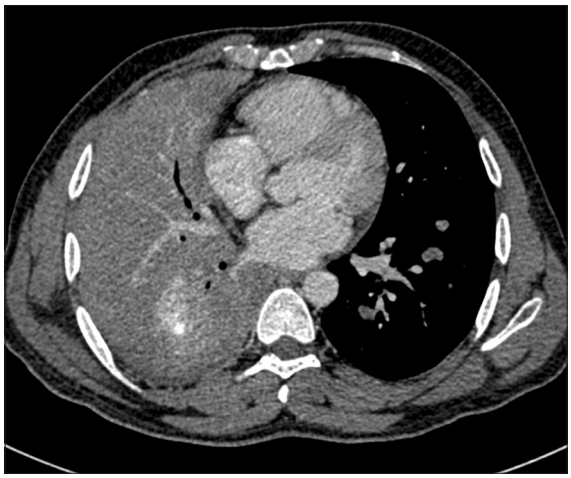

Figure 2: Contrast-enhanced computed tomography thorax (mediastinal window) revealed a mass lesion in all segments of the right lower lobe and alveolar consolidation in posterior segment of right lower lobe and right middle lobe, multifocal consolidation in the right upper lobe and smooth contoured nodules in the left lower lobe

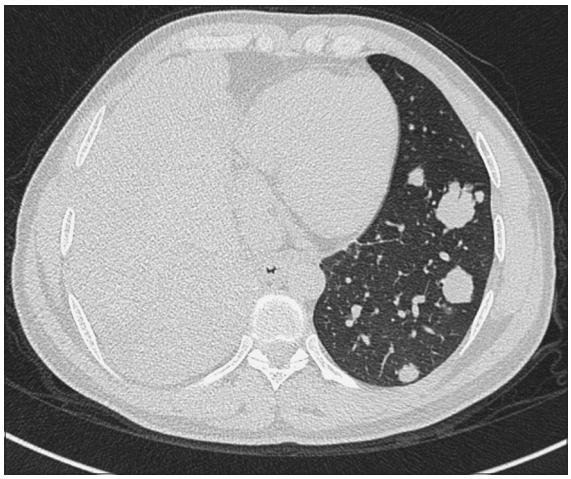

Figure 3: Contrast enhanced computed tomography thorax with the lung window

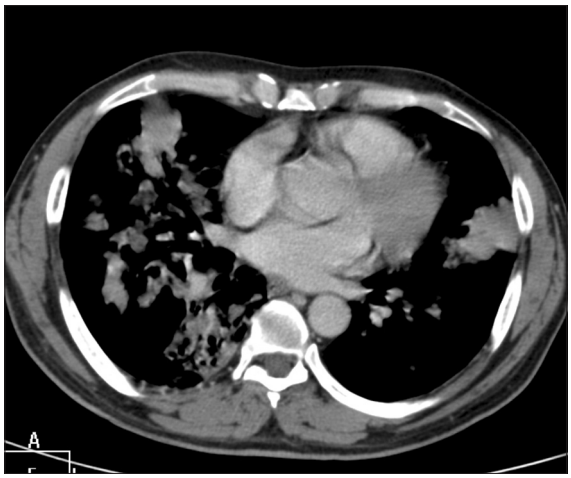

Figure 4: Contrast enhanced computed tomography thorax revealed multifocal consolidation of superior and lateral segments of left lower lobe and anterior, superior and posterior segments of right lower lobe

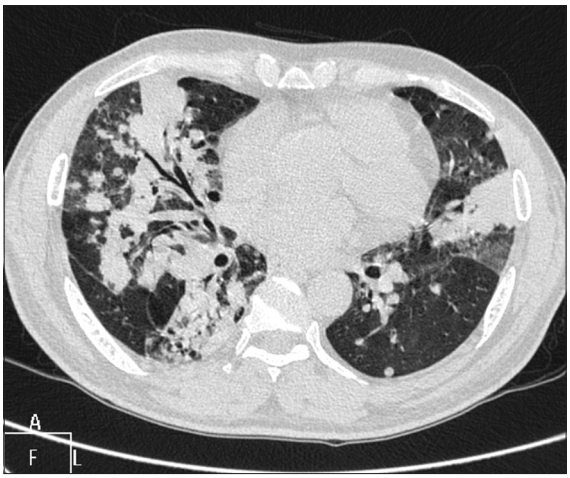

Figure 5: Contrast enhanced computed tomography thorax showing the lung window

subtypes of adenocarcinoma are acinar, papillary, bronchioloalveolar, and solid adenocarcinoma with mucin production.

PA accounts for 7.4%–12% of the lung adenocarcinomas.[6] PA forms a distinct pathological and radiological entity.

Radiologically PA may appear as poorly defined/well-defined lung nodule/masses which may be associated with hilar lymphadenopathy. The masses may show internal bubble lucencies, surrounding areas of ground glass opacities and satellite micronodules.[7] PA occurs predominantly in female and nonsmokers.

Till date, three pathological criteria have been proposed for defining PA of lung. Silver and Askin defined PA in an adenocarcinoma with >75% papillary structures supported by fibrovascular cores with complicated secondary and tertiary branches.[3] Noguchi *et al*. had classified lung adenocarcinoma subtypes based on tumor growth patterns. In their classification, PA was defined as Type F small adenocarcinoma of lung.[7] The WHO classification defines PA as adenocarcinoma with predominance of papillary structures that replace the underlying alveolar architecture.[8] Recognizing papillary subtype of adenocarcinoma is difficult because of it histological complexity. There is controversy as to whether PA is a specific entity or a variant of bronchioloalveolar carcinoma.[3] PA needs to be distinguished from another entity labeled as lung adenocarcinoma with micro PA lung. The presence of micropapillary component in PA is associated with nonsmoker status, early lymph node metastasis, intrapulmonary metastasis and a significantly lower 5-year survival rate.[8]

Radiologically, PA presents as solitary nodule or consolidation or multicentric, diffuse disease.

TTF-1 immunostaining is positive in 85% of primary lung adenocarcinoma whereas metastatic adenocarcinoma to the lung is TTF-1 negative.[9]

The presence of multifocal lung consolidation on radiography can lead to a diagnostic dilemma. Increased use of computerized topographic scan has lead to identification of small nodules, many of which prove to be adenocarcinoma. Worldwide, there is an emergence of chemotherapeutic agents with therapeutic efficacy that is specific to histological subtype. Pulmonologists and oncologists will need a diagnosis of the subtypes of adenocarcinoma for better treatment outcome in future.

Financial support and sponsorship
Nil.

Conflicts of interest
There are no conflicts of interest.

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Quick Response Code:

Website: www.lungindia.com

DOI: 10.4103/lungindia.lungindia_467_15

How to cite this article: Karmakar S, Nath A, Neyaz Z, Agarwal V, Ahsan S. Primary papillary adenocarcinoma of the lung: Report of two cases. Lung India 2017;34:299-302.