



Case report

Palliative embolisation for intrapulmonary shunting in lepidic predominant adenocarcinoma of the lung



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ABSTRACT

Lepidic predominant adenocarcinoma (LPA) (formerly known as bronchioalveolar carcinoma) has rarely been reported to cause refractory hypoxia with intrapulmonary shunting [1–7]. We describe a case who underwent the palliative strategy of intravascular right lower pulmonary artery embolisation with an 18 mm Amplatzer II vascular plug to reduce intrapulmonary shunting. This is the first report we are aware of using this minimally invasive procedure to treat this condition.

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1. Clinical record

A 64 year old man presented with haemoptysis and refractory hypoxia (pO₂ 41 mmHg on FiO₂ 0.8) following a short flight. He was transferred for palliation closer to home. His history included 50 pack years smoking, asbestos exposure and weight loss. CT thorax (See Fig. 1) revealed extensive, dense consolidation of both lungs, bilateral hilar and subcarinal adenopathy, and centrilobular emphysema, but with no distant metastases evident. Sputum cytology reported atypical cells, favouring adenocarcinoma. He was polycythaemic with a haemoglobin of 203 g/L. He received antibiotics to treat any infective component, and glucocorticoids but without significant improvement. His oxygen saturations remained between 70 and 80% despite high flow oxygen. He was too unwell

for further invasive investigations such as biopsy, or treatment such as chemotherapy (unknown ALK and EGFR status). He sought palliation and was discharged home with home oxygen approximately 10 L/min achieved via OxyMask with 2 connected oxygen concentrators.

8 months after initial diagnosis, he remained hypoxic, although his general condition remained stable (ECOG performance status 3) with no evidence of other end organ dysfunction. He was re-evaluated with CT scans, respiratory function tests, arterial blood gases, VQ scan, bubble contrast echocardiogram and a 100% oxygen shunt study. The calculated shunt fraction was 25% (pO₂ 54.1 on 100% O₂, PCO₂ 38.9, SaO₂ 88%, Hb195). There was no evidence of extra-pulmonary shunting. The VQ scan revealed marked perfusion to the unventilated right lower lobe, consistent with significant intrapulmonary shunting. Distant metastases were not detected and there was only marginal progression of his extensive consolidation to both lungs. Given his poor pulmonary reserve, biopsy for EGFR and ALK status was not undertaken. However after multi-disciplinary discussion, the feasibility of a palliative procedure to reduce the shunt and hopefully improve his oxygenation and quality of life was considered.

With informed consent, he underwent pulmonary angiography with intrapulmonary catheterisation and temporary occlusion of the right inferior pulmonary artery which improved oxygen

Abbreviation List: LPA, lepidic predominant adenocarcinoma; CT, computed tomography scan; ECOG, Eastern Cooperative Oncology Group performance status; VQ, ventilation-perfusion scan.

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saturations from 79% to 82%. Subsequent embolisation of his right lower lobe pulmonary artery with an 18 mm Amplatzer vascular plug II device was then performed. (See Fig. 2) He improved clinically although the dramatic improvement in oxygenation was not sustained with SaO₂ decreasing to 78–81% on 10 L O₂ within 1 day. Repeat VQ scanning 3 days later confirmed reduced perfusion of the non-ventilated posterobasal and lateral basal segments of the right lower lobe compared with the pre-procedural scan. However there was still flow to the superior and anterobasal segments of the right lower lobe. (See Fig. 3). He remained stable and was discharged home 5 days post procedure. He reported marked symptomatic improvement in his ability to carry out activities of daily living. His home monitored peripheral SaO₂ were between 71 and 96 % with a median of 86%. He subsequently died 3 months later from a complicated pneumothorax and pulmonary embolism.

Autopsy revealed extensive LPA involving all lobes of both lungs as well as hilar, mediastinal and retrosternal lymph nodes. There was a right upper lobe pulmonary embolus and a left upper lobe abscess colonised by aspergillus. The Amplatzer vascular plug was identified within a large vessel at the boundary of the right lower and middle lobes, with no evidence it contributed to his death.

2. Discussion

This is the first report we are aware of to use this minimally invasive, palliative procedure to improve shunting within a lung adenocarcinoma (lepidic predominant). There are few literature reports of LPA with refractory hypoxia from intrapulmonary shunting [1–7]. 5 reports have described 10 patients who

underwent palliative surgery to correct the intrapulmonary shunt and hypoxia (see Table 1) [1–5]. Survival post resection ranged from 21 days to 24 months [1–5]. Some underwent chemotherapy and/or radiation therapy [1–5]. One patient even proceeded to

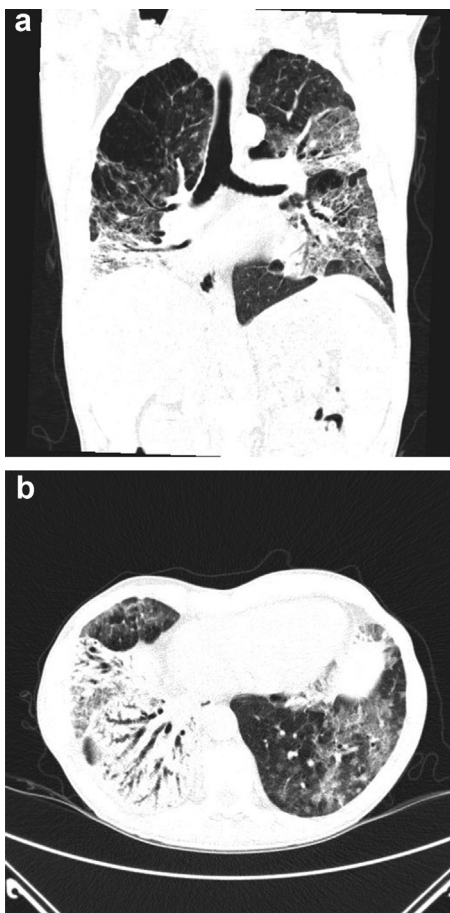


Fig. 1. a) CT coronal view, b) CT axial view.

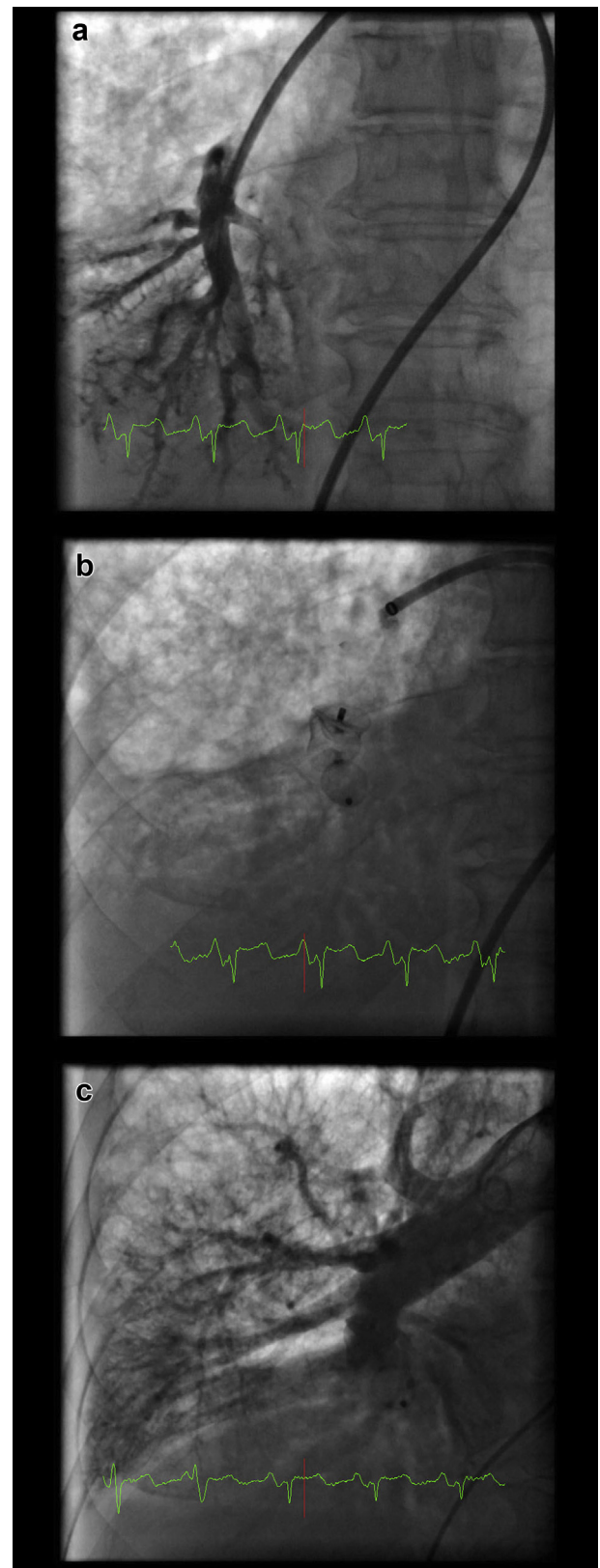


Fig. 2. a) Pre vascular plug, b) vascular plug profile, c) post.

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