Morphologically, ALK+ LBCL shows sinusoidal growth pattern of immunoblasts or plasmablasts. By immunohistochemistry, this lymphoma characteristically lacks pan B-cell markers such as CD20 and CD79a and expresses plasma cell markers such as CD38 and CD138.[4] Rare cases of ALK+ LBCL have shown pancytokeratin positivity and have been initially misdiagnosed as carcinomas.[11] None of the tumours have shown positivity for EBV or HHV-8. With the exception of few cells in the central nervous system, ALK is not normally expressed in any other human cells.[12] As such, it provides a relatively specific marker for the tumours in which it is expressed.

Patients with ALK+ LBCL tend to have poor prognosis.[13,14] Current guidelines consider CHOP to be inadequate for the treatment of plasmablastic lymphoma. A more aggressive treatment regimen such as EPOCH is required. Unfortunately, given the rarity of the disease, a standard treatment regimen for ALK positive DLBCL has not been determined. The presence of a translocation involving ALK and knowledge of it activating the STAT3 and STAT5 pathway presents the possibility of use of STAT3 inhibitors or ALK inhibitors.[13,14] Our patient was treated with crizotinib (ALK inhibitor) as he was refractory to multiple chemotherapies and is now being worked-up for an allogeneic stem cell transplant.

In summary, although rare, it is important to maintain ALK+ LBCL in the differential diagnosis of a plasmablastic neoplasm. This case emphasises the challenge that plasmablastic neoplasms can pose on needle core biopsy specimens and an algorithmic approach can avoid this diagnostic pitfall. In addition, an association between ALK+ LBCL and ulcerative colitis has not been reported previously nor has an association with immunosuppression been described; thus, this report contributes new information in this scenario.

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Nodular pulmonary light chain deposition disease

Sir,

Light chain deposition within the lung is rare and may be seen in diffuse or nodular forms.[1] Both forms can be associated with a plasma cell dyscrasia, a lymphoproliferative disorder and/or multiorgan involvement. The nodular form has an overall better prognosis.

A 73-year-old man had a computed tomography scan for a hepatic artery aneurysm in 2012 and was incidentally discovered to have two pulmonary nodules, one in the right lower lobe and the second in the right middle lobe. He remained asymptomatic and serial imaging showed very minimal increase in the size of these nodules. In May 2015, he had a positron emission tomography scan which showed the right lower lobe lesion to be 25 mm in size and moderately fluorodeoxyglucose (FDG) avid. The right middle lobe nodule was stable at 7 mm in size and was not FDG avid.

The patient underwent a wedge resection of the smaller right middle lobe lesion and an intraoperative frozen section showed abundant eosinophilic osteoid-like material with an associated inflammatory infiltrate, without unequivocal evidence of malignancy. He then had a right lower lobectomy to remove the larger, centrally located, FDG avid lesion.

Macroscopically, the larger lower lobe lesion caused distortion of the visceral pleural surface. Both lesions were extremely firm, with similar appearances on cut section, with both being relatively well circumscribed, pale tan/grey solid nodules with small areas of haemorrhage within (Fig. 1A).

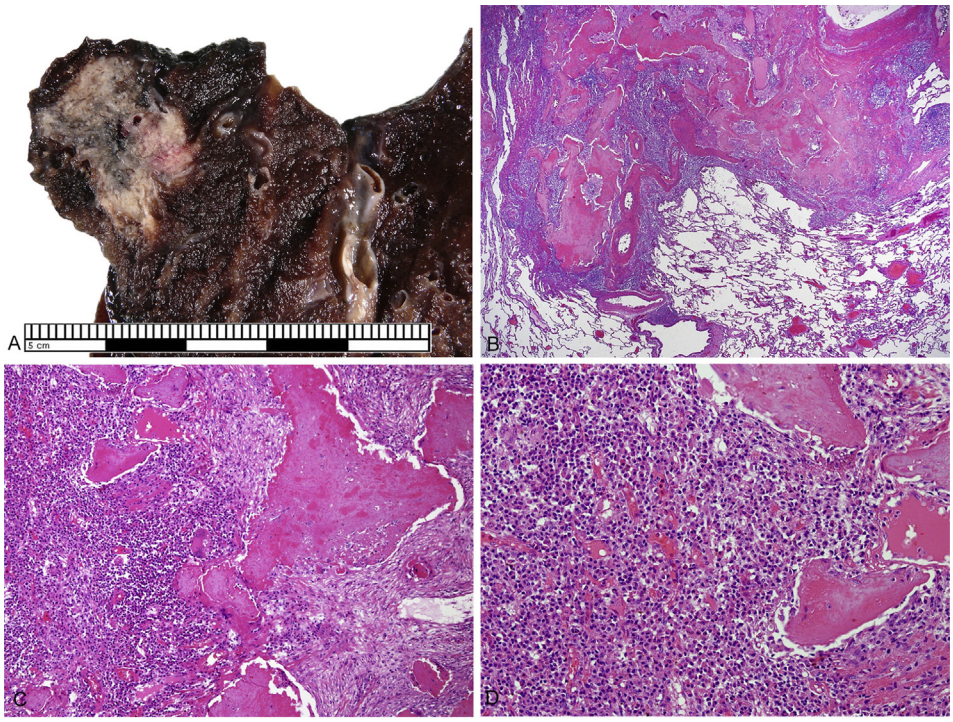

Fig. 1 (A) Section through right lower lobe nodule demonstrating its firm, pale tan/grey cut surface. (B) Low power view of lung parenchyma and relatively irregularly-circumscribed lesion comprising islands of amorphous eosinophilic material and a dense inflammatory infiltrate (H&E). (C) High power view of amorphous eosinophilic material with foreign body-type giant cell reaction and adjacent lymphoplasmacytic infiltrate (H&E). (D) Numerous mature plasma cells and scattered small lymphocytes in between islands of amorphous material (H&E).

Microscopically, both lesions were situated in a subpleural location but did not extend to involve the pleura. They comprised a poorly circumscribed nodular deposition of abundant eosinophilic amorphous material, rimmed by multinucleate giant cells (Fig. 1B,C). Focally, the amorphous material replaced the walls of blood vessels. In between the deposits were groups of chronic inflammatory cells, including abundant plasma cells, small lymphocytes and scattered histiocytes (Fig. 1D). Granulomata were absent. There was no evidence of epithelial malignancy.

A Congo red stain showed patchy pink staining within the amorphous material; however, there was no apple green birefringence (Fig. 2A). Immunohistochemical staining with CD138 confirmed the presence of abundant plasma cells (Fig. 2B). However, despite a large proportion of plasma cells showing IgG positivity, there were only a small number of IgG4 positive plasma cells (Fig. 2C). Kappa light chain immunohistochemistry was diffusely positive within the amorphous material. It also showed Kappa light chain predominance within the plasma cells, suggestive of, but not conclusive for, Kappa light chain restriction (Fig. 2D).

Electron microscopy was performed on paraffin embedded tissue and showed electron dense deposits ranging in size from larger deposits of 4−5 μm across to smaller granular deposits down to 0.1 μm. The larger deposits had collagen fibrils running through them (Fig. 2E,F).

Given the microscopic, immunohistochemical and electron microscopic features, a diagnosis of nodular pulmonary light chain deposition disease (LCDD) was made.

Nodular pulmonary light chain deposition disease is rare, with only small case series and single case reports published in the literature.[2,3] Due to the rarity of the diagnosis, as well as the unusual morphology of these lesions, several differential diagnoses were considered. These included pulmonary amyloid deposition, inflammatory myofibroblastic tumour, IgG4-related disease, nodular lymphoid hyperplasia, lymphoma and plasmacytoma.

Although the amorphous eosinophilic material had patchy pink staining on Congo red stains, it did not have the apple green birefringence that would be expected for amyloid. Furthermore, on electron microscopy, the material was not comprised of the characteristic non-branching amyloid fibrils.

Inflammatory myofibroblastic tumour has an admixture of bland spindle cells arranged in fascicles or a storiform pattern, and a mixed chronic inflammatory infiltrate of plasma cells, lymphocytes and histiocytes.[4] Immunohistochemical staining for ALK is often positive within the spindle cells. The patient's lesions included a prominent lymphoplasmacytic infiltrate; however, a spindle cell element was absent and staining for ALK was negative.

IgG4-related disease involving the lung can present as solitary or multiple pulmonary nodules that may be discovered incidentally.[5] The key histological features are the same as for other sites and comprise a dense lymphoplasmacytic inflammatory infiltrate, storiform-type fibrosis and obliterative phlebitis.[6] In lung lesions, storiform fibrosis can be absent and obliterative arteritis is a common finding.[6,7] Although this patient's lesions had a patchy lymphoplasmacytic infiltrate, both fibrosis and vasculitis were absent. Immunohistochemical staining for IgG4 showed only a small number of positive plasma cells, whereas the current recommendation suggests at least 50 positive cells per high power field are significant for diagnosis.[5]