





An endobronchial hamartoma observed using narrow band imaging under saline injection: A case report

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Abstract

A light blue line (LBL) was observed along the edge of a lesion using narrow band imaging under saline injection during bronchoscopy in an 82-year-old patient with a lobulated mass on the left B⁴. The histopathological diagnosis was hamartoma with ciliated bronchial epithelium, and we speculated that LBL appeared around the ciliated bronchial epithelium.

KEYWORDS

hamartoma, light blue crest, light blue line, narrow band imaging, saline injection

INTRODUCTION

Narrow band imaging (NBI; Olympus Medical Systems, Tokyo, Japan) has been reported to be useful for bronchoscopic diagnosis of endobronchial lesions, particularly for assessing the vascular characteristics of lesions. ‘Light blue crest’ (LBC) observed using NBI with magnifying endoscopy has been reported in the field of gastrointestinal endoscopy.¹ The LBC is presumed to reflect the brush border along the edges of the marginal crypt epithelium in gastric intestinal metaplasia. We experienced a case of endobronchial hamartoma in which a light blue line (LBL) similar to LBC was observed on the surface using NBI under saline injection.

CASE REPORT

An 82-year-old man with a smoking history of 20 cigarettes per day for 40 years was admitted to our hospital after experiencing sudden severe back pain. Computed tomography (CT) imaging showed bone fractures of the lumbar

spine, which were suspected to be bone metastases. Chest CT images showed consolidation with bronchial obstruction of the left B⁴ (Figure 1). Although the C-reactive protein level was high (13.9 mg/dl), the levels of tumour markers for lung cancer were within the normal range. Bronchoscopy was performed using a bronchoscope (BF-6C260; Olympus Medical Systems). A smooth-surfaced, lobulated mass obstructing the left B⁴ was observed under white light (Figure 2A) and NBI (Figure 2B). A small amount of saline was injected via the bronchoscope into the bronchial lumen at the surface of the lesion, which was then visualized using NBI (Figure 2C). Superficial vessels were not observed on the mass. Each soft lobulated part moved slightly in the saline. We noticed a bluish white line along the edge of the lobulated lesion, which was not noticeable under white light. We then switched to a thin bronchoscope (BF-P260F; Olympus Medical Systems) and observed the lesion under endobronchial ultrasonography (EBUS) using a radial probe (UM-S20-17S; Olympus Medical Systems) (Figure 2D). EBUS showed that the lesion extended beyond the bronchial cartilage. Biopsies were performed under direct vision. Histopathological

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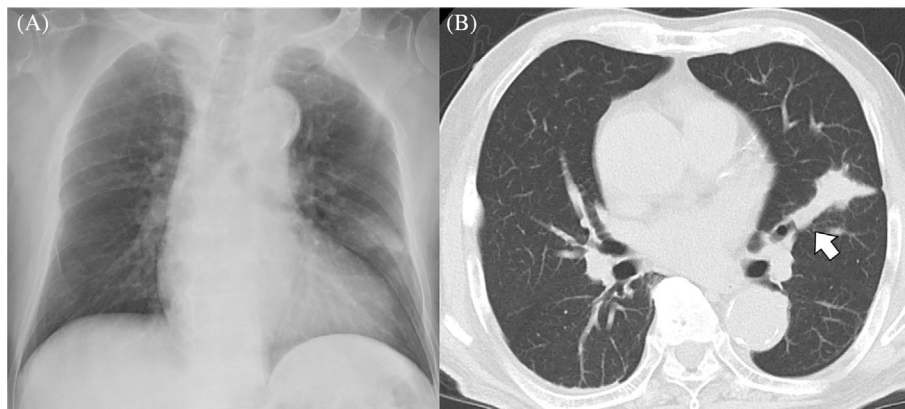


FIGURE 1 Radiographic findings. (A) Chest x-ray image showing a shadow in the left middle field. (B) Chest computed tomography image showing consolidation with bronchial obstruction of B⁴ in the left lingular segment (arrow).

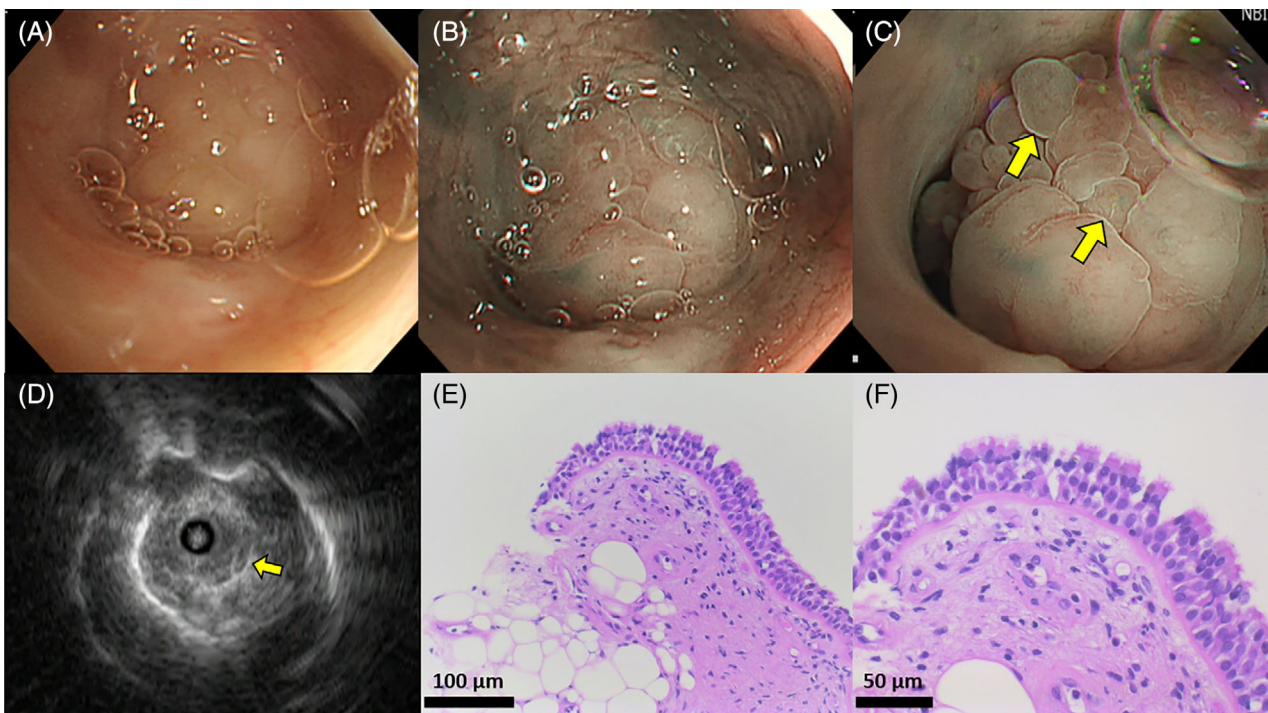


FIGURE 2 Bronchoscopic findings. (A) A smooth-surfaced, lobulated mass obstructing the left B⁴ observed under white light. The surrounding bronchial epithelium was normal. (B) Narrow band imaging (NBI) showing few vessels on the surface. (C) NBI under a small amount of saline revealing a light blue line along the edge of the lobulated lesion (yellow arrows). (D) Endobronchial ultrasonography showing the lesion extending beyond the bronchial cartilage (yellow arrow). (E) Histopathological findings of the biopsy specimens (H&E staining). Fibrosis, oedema and fatty tissue in the subepithelial layer were present, with a ciliated bronchial epithelium. The pathological diagnosis was hamartoma. (F) Magnified photograph of H&E staining. A ciliated bronchial epithelium is observed.

findings of the biopsy specimens included fibrosis, oedema and fatty tissue in the subepithelial layer, with a ciliated bronchial epithelium (Figure 2E,F). The pathological diagnosis was hamartoma. Magnetic resonance imaging suggested that prostate cancer was the primary lesion of the bone metastases. The patient was bedridden, became weak within a short period and eventually died due to a new episode of aspiration pneumonia.

DISCUSSION

We observed an endobronchial hamartoma presenting with an LBL at the edge of the lesion using NBI under saline injection. We speculated that LBL appeared around the ciliated bronchial epithelium.

NBI permits the observation of blood vessels and the epithelial surface by irradiating narrow-band light in two

different wavelengths: 415 nm, which is easily absorbed by haemoglobin present in capillaries in the superficial layer of the subepithelial tissue, and 540 nm, which is absorbed by vessels in the deep layer of the subepithelial tissue.

Uedo et al.¹ identified a blue-white line on the mucosal surface in gastric intestinal metaplasia using NBI with magnifying endoscopy and named it LBC. They speculated that LBC appeared as a dense reflection of light with wavelengths of 400–430 nm on the brush border of the surface. Similar to an LBC, the LBL might be the result of certain structural colours around the ciliated bronchial epithelium. As LBL was observed at the border of the surface of the circular folds during bronchoalveolar lavage in our experiences, we presume that LBL can also be observed around the normal bronchial epithelium. LBL might be useful to presume the origin of the lesion and facilitate bronchoscopic diagnosis.²

Injecting saline is also a key factor for NBI observation. The advantages of saline injection are that it eliminates light reflection on the surface, makes it easier to observe surface structures, extends the depth of field and makes it easier to focus.³ Additionally, saline injection plays an important role during bronchoscopy by removing sputum and bronchial secretions and preventing bronchial collapse (particularly in the peripheral bronchi).^{4,5} In our experiences, we observed bronchoscopic findings using NBI with saline injection such as regularly arranged vessels with uniform calibre in the normal bronchial wall, irregularly shaped dotted vessels in squamous cell carcinoma and irregularly arranged vessels with changed calibres in malignant lesions. The additional role of NBI in the diagnostic workup for this case was to confirm the absence of vascular findings suspicious of malignancy.

In conclusion, we observed an endobronchial hamartoma presenting an LBL at the margin of the lesion using NBI under saline injection. Furthermore, we need to compare LBL with pathological findings of bronchial lesions.

AUTHOR CONTRIBUTION

Misato Kobayashi and Noriaki Kurimoto wrote the first draft of the manuscript. Yuki Mitarai and Noriaki Kurimoto performed bronchoscopy and recorded the data. Takae Okuno, Mika Nakao, Takamasa Hotta, Megumi Hamaguchi, Yukari Tsubata and Takeshi Isobe critically revised the manuscript for important intellectual content. All authors have read and agreed on the final version of the manuscript.

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CONFLICTS OF INTEREST

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

ETHICS STATEMENT

The authors declare that appropriate written informed consent was obtained for the publication of this manuscript and accompanying images.

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