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CORRESPONDENCE

Anaphylactic reaction to patent blue V used in preoperative computed tomography-guided dye localization of small lung nodules



Tsung-Ta Wu^a, Yeun-Chung Chang^b, Jan-Ming Lee^c,
Ming-Hui Hung^{a,d,*}

^a Department of Anesthesiology, National Taiwan University Hospital, Taipei, Taiwan

^b Department of Medical Imaging, National Taiwan University Hospital, Taipei, Taiwan

^c Department of Surgery, National Taiwan University Hospital, Taipei, Taiwan

^d Graduate Institute of Clinical Medicine, National Taiwan University College of Medicine, Taipei, Taiwan

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Dear Editor,

Currently, low-dose computed tomography (CT) detects many small and nonsolid lung nodules, which are not palpable and difficult to be identified during thoracoscopic surgery.¹ Preoperative CT-guided dye localization can facilitate surgery and is therefore increasingly used to target small lung lesions.² However, anaphylactic reaction to blue dye injected in the lung parenchyma is rarely reported.

A 71-year-old man with hypertension, arrhythmia, and a history of colon cancer was treated by colonic resection 6 years ago. In his follow-up, bilateral pulmonary nodules with increasing size were found (8 mm in the right lower lobe and 11.5 mm in the left lower lobe). Positron emission tomography revealed high probability of malignancy. Bilateral thoracoscopic metastatectomies were indicated. Prior to the surgery, 0.2 mL of patent blue V dye (Patent

Blue V 2.5%; Guerbet, Aulnay-sous-Bois, France) was injected around each nodule under thoracic CT guidance to localize the resected sites. However, generalized urticaria over his trunk and lower extremities, and a drop in his blood pressure to 64/24 mmHg were noted at the end of the procedure (60 minutes after initial dye injection) and before he was transferred to the operating room. He was not in respiratory distress. Under the impression of an anaphylactic reaction, the radiologist promptly administered diphenhydramine 30 mg, hydrocortisone 100 mg, and intravenous infusion of 1 L crystalloid to achieve hemodynamic stabilization, and notified both the surgeon and the anesthesiologist about the anaphylactic event. Considering the limited duration of dye localization and to avoid future re-exposure to the dye, we decided to proceed with the surgery after reobtaining consent from the patient. However, tracheal intubation with a double-lumen endobronchial tube was difficult because of laryngeal edema and hence a 7.0 mm single-lumen tracheal tube was used. Sequential one-lung ventilation was achieved using an endobronchial blocker. To avoid excessive fluid resuscitation and pulmonary edema, perioperative infusion of epinephrine (0.01–0.03 µg/kg/min) was administered to maintain his perfusion. The surgery was uneventful, and his tracheal tube was removed on the next day. Twenty-four hours after the surgery, the serum tryptase level and

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* Corresponding author. Department of Anesthesiology, National Taiwan University Hospital, 7, Chung-Shan South Road, Taipei 10002, Taiwan.

E-mail address: hung.minghui@gmail.com (M.-H. Hung).

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leukotriene release test confirmed that the dye was the cause of his anaphylactic reactions.

Patent blue V dye is in widespread use for sentinel lymphatic mapping in breast cancer surgery.³ Its anaphylactic potential has long been recognized with an incidence between 0.6% and 2.7%, which is much higher than anesthetic drugs used in surgeries.⁴ Most reported cases were lack of previous exposure of blue dye or denied an atopic history.⁵ An unproven hypothesis states that the common use of blue dyes as colorants in everyday objects, including food, textiles, or cosmetics, facilitates sensitization of patients against these dyes.^{4,5} To our knowledge, anaphylactic reaction to dye injection in the lung parenchyma has not yet been reported in the literature. Owing to the increasing implementation of dye localization of small lung nodules prior to a thoracoscopic surgery, the radiologist, surgeon, and anesthesiologist are reminded of its potential allergenic properties. Alertness and early intervention play important roles in the management of this situation that we faced. Clinical decisions regarding whether to cancel the schedule or not, hemodynamic stabilization, perioperative airway, and fluid

management, should be made individually for each patient, especially for patients undergoing lung resection surgery.

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