A new non-invasive diagnostic method for lung lobe torsion: Pulmonary CT angiography

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ÖZET

Akciger lob torsiyonu için yeni bir noninvaziv tanusal metod: Pulmoner BT anjiyografi


Anahtar Kelimeler: Lob torsiyonu, BT anjiyografi, cerrahi.

SUMMARY

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Torsion of the remaining lung lobe after lobectomy is an uncommon event which is difficult to diagnose and may result in hemorrhagic infarction and fatal gangrene (1). There is little information on its natural history. We report a case of right upper lobe torsion after middle lobe resection for bronchiectasis, diagnosed with noninvasive pulmonary computerized tomography (CT) angiography. Rethoracotomy with an upper lobectomy was performed. She was asymptomatic at the two-year follow-up. Although the bronchoscopy has a great value in the diagnosis, CT angiography is an effective noninvasive method for confirming the correct diagnosis. A high index of clinical suspicion, early diagnosis and aggressive management may improve survival.

**Key Words:** Lobe torsion, CT angiography, surgery.

Torsion of the remaining lung lobe after lobectomy is an uncommon event which is very difficult to diagnose and may result in hemorrhagic infarction and fatal gangrene. We report a case of right upper lobe torsion after middle lobe resection for bronchiectasis, diagnosed with noninvasive pulmonary computerized tomography (CT) angiography. Rethoracotomy with an upper lobectomy was performed. She was asymptomatic at the two-year follow-up. Although the bronchoscopy has a great value in the diagnosis, CT angiography is an effective noninvasive method for confirming the correct diagnosis. A high index of clinical suspicion, early diagnosis and aggressive management may improve survival.

**CASE REPORT**

A forty-three-years-old woman was admitted to our institution with hemoptysis. The patient had undergone right middle lobectomy for bronchiectasis two months ago. Breath sounds were markedly diminished over the right upper zone on physical examination. PA chest radiography showed an opacified right hemithorax (Figure 1). Chest CT revealed consolidation containing numerous air bubbles in the right upper lobe. Right upper lobe torsion was suspected and a three-dimensional (3D) pulmonary CT angiography was planned. Pulmonary CT angiography showed consolidation with low densities suggesting necrosis and infarction in the right upper lobe. Right upper lobe artery, upper lobe bronchus and right superior pulmonary vein were occluded. The middle lobe bronchus was seen as a stump (Figure 2,3).

In the preoperative fiberoptic bronchoscopy, right upper lobe bronchus was observed narrow with hemorrhage at the entrance, while middle lobe bronchus stump was detected intact. Right posterolateral rethoracotomy was performed with the diagnosis of right upper lobe torsion. At surgery, upper lobe was completely consolidated and discolored. After hilar dissection it was seen that the superior pulmonary vein had been ligated during middle lobectomy and the upper lobe was twisted around its pedicle. The torsion was relieved manually and an upper lobectomy was performed. Pathologic examination revealed hemorrhagic infarction throughout the pulmonary parenchyma. During the postoperative period, the patient was treated with antibiotics for wound infection and discharged on day 29. She was asymptomatic at the two-year follow-up.

**DISCUSSION**

Lobar torsion, which is a rotation of the bronchovascular pedicle with resultant airway obstruction and vascular compromise, is a rare event. This unusual accident may sometimes be lethal (2-4). This disorder has been described in 3 different circumstances: as a complication of thoracic surgery, after blunt trauma, and spontaneously. Epplen and Jacobson made the first desc-
ription of lobar torsion in 1930 (5). Keagy and colleagues noted one case of lobar torsion from 369 lobectomies with an incidence of 0.3% (6). Larsson and colleagues noted four cases from approximately 2000 thoracotomies with an incidence of 0.2% (4). Cable and colleagues noted 7 lobar torsions (0.089%) from 7887 pulmonary resections (7).

Pathophysiology of lobar torsion is controversial. Five predisposing factors are described by Felson as mechanisms in lung torsion: atelectasis or insufficient inflation of a lobe, an extended flap, absence of parenchymal connections between lobes, pneumothorax and/or effusions, and transposition of the pulmonary ligament (8).

Patients with torsion of a lung or lobe present a diagnostic challenge. A definitive diagnosis may sometimes be difficult or impossible. A high in-
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References