

Penetrating thoracic trauma due to an exploded battery

Pil patlamasına bağlı penetran toraks travması

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Penetrating thoracic trauma (PTT) rarely occurs indoors. We report a case of PTT which occurred as a result of the explosion of a lithium battery, which is commonly used in daily life. A 47-year-old male patient was admitted to our Emergency Service Department after a rechargeable lithium battery exploded in his hand as soon as he had taken it out of the charging apparatus. A foreign body was observed in the anterior chest wall and minimal bilateral pneumothorax was documented on computed tomography. The foreign body was removed under local anesthesia and conservative therapy was applied. Our case, though rare, pointed out the possibility of the development of a life-threatening PTT due to the explosion of a battery.

Key words: Penetrating thoracic trauma; lithium battery; explosion.

The incidence of penetrating thoracic trauma (PTT) has been increasing due to terrorist activities, wars and accidents. Penetrating thoracic trauma rarely occurs indoors. We report a PTT which occurred as a result of the explosion of a lithium battery, which is commonly used in daily life.

CASE REPORT

A 47-year-old male was admitted to the emergency department with a foreign body in his left thoracic wall. While the patient, who is a technician, took a rechargeable lithium battery out of the charging apparatus, it exploded in his hand. He felt pain on the left side of his chest and began bleeding from his anterior chest wall. On physical examination, his general status was well. A foreign body was observed in the left anterior chest wall (Fig. 1). His breath sounds were normal. Laboratory studies revealed normal hemoglobin and serum chemistry. Chest roentgenography revealed the foreign body to be localized laterally

Penetran toraks travması (PTT) ev içi kazalarda nadiren gelişir. Bu yazıda günlük hayatta sıklıkla kullanılan lityum pilin patlaması sonucu oluşan PTT olgusu sunuldu. Kırk yedi yaşında erkek hasta şarj edilebilir lityum pili şarj cihazından aldığı sırada, elinde patlaması üzerine acil servisimize başvurdu. Yabancı cisim sol anterior toraks duvarında görüldü. Toraks bilgisayarlı tomografisinde iki taraflı minimal pnömotoraks saptandı. Yabancı cisim lokal anestezi ile çıkarıldı ve konservatif tedavi uygulandı. Ender karşılaşılsa da, bu olgu sunumunda pil patlaması sonucu hayatı tehdit eden PTT gelişebilme olasılığını vurgulamak istedik.

Anahtar sözcükler: Penetran toraks travması; lityum pil; patlama.

3 cm to the left of the sternum between the 3rd and 4th ribs (Fig. 2). On computed tomography (CT), a foreign body and minimal bilateral pneumothoraces were observed (Fig. 3). The foreign body was removed under local anesthesia (Fig. 4). An air leak was seen through the chest wall defect in the thorax. The wound was sutured after debriding the wound margins. After a three-day follow-up, antibiotic therapy was initiated and the patient was discharged. No complications were observed on follow-up.

DISCUSSION

Foreign bodies may be observed anywhere in the chest due to accidents or trauma.^[1] Penetrating thoracic trauma may be associated with damage to intrathoracic structures. Clinical and radiological findings depend on the location of injury and their complications.^[2] Penetrating wounds of the thorax have been reported with pneumothorax in 20% or hemothorax in 60-80% of the cases.^[1] A serious

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Fig. 1. Foreign body detected in the left anterior chest wall.



Fig. 2. Chest roentgenography showed the foreign body.

internal injury seldom occurs without an obvious external thoracic injury.

A metallic foreign body can easily be detected by plain chest X-ray or CT. Metallic foreign bodies in the thorax can cause pneumothorax, hemothorax, atelectasis

and obstructive pneumonia. It has also been reported that a foreign body located in the pleural cavity may cause chronic empyema and malignancy.^[3]

Non-metallic foreign bodies are difficult to detect. It has been reported that pieces of cloth and wood were removed with exploratory thoracotomy performed due to recurrent infections.^[4]



Fig. 3. Chest computed tomography showed (a) foreign body, (b) bilateral minimal pneumothorax.

There have been various reported cases of intraocular foreign bodies or burnt extremities due to battery explosions. However, we did not encounter any PTT cases in the literature. Battery explosion is described as the dispersion of solid battery particles as far as 25 cm. As stated by Institution of Turkish standards, replacement of batteries in wrong position, overheating or misapplication of the charging instructions may cause such accidents as the one in this case.

Our case, though rare, pointed out the possibility of the development of a life-threatening PTT due to the explosion of a battery.



Fig. 4. Exploded lithium battery.

REFERENCES

1. Kim TJ, Goo JM, Moon MH, Im JG, Kim MY. Foreign bodies in the chest: how come they are seen in adults? *Korean J Radiol* 2001;2:87-96.
2. Baharloo F, Veyckemans F, Francis C, Bieltlot MP, Rodenstein DO. Tracheobronchial foreign bodies: presentation and management in children and adults. *Chest* 1999;115:1357-62.
3. Kim WT, Yoo SY, Shin HJ, Kim JR. Squamous cell carcinoma associated with chronic empyema caused by metallic foreign body: a case report. *J Korean Radiol Soc* 2000;42:91-4.
4. Cerimagić Z, Guska S, Kadić K, Banjanović B. Foreign bodies in the thorax. *Vojnosanit Pregl* 2007;64:61-3. [Abstract]