

SURİYELİ MÜLTECİLERDE ACİL TORAKS YARALANMALARI

Emergency Thoracic Injuries in Syrian Refugees

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ÖZET

Giriş: Toraks yaralanmaları özellikle savaşlarda artış gösterir. Biz bir aylık dönem içerisinde toraks travması nedeniyle hastanemize getirilen Suriyeli mülteciler ile ilgili deneyimimizi paylaşmak istedik.

Gereç Yöntem: Eylül-2012’de göğüs cerrahi kliniğinde tedavi gören 24 Suriyeli mültecinin (23 erkek, 1 kadın) klinik kayıtları retrospektif olarak incelendi. Tüm hastalar hastanemiz acil servisine sınır ötesinden ambulanslarla getirildi.

Bulgular: Hemopnömotoraks nedeniyle 17 hastaya tüp torakostomi uygulandı. Acil torakotomi 24 hastanın 8’ine yapıldı. Sekiz hastanın 5’i herhangi bir radyolojik değerlendirme yapılmadan açık göğüs duvarı defekti ve şok durumunun olması nedeniyle cerrahiye alındı. Yelken göğüs ve masif hemotoraks olan bir hastaya plak ile kosta fiksasyonu yapıldı. Bir hastaya sol alt lobektomi, 4 hastaya linear kesiciler kullanılarak pulmoner non-anatomik wedge rezeksiyon, 4 hastaya pnömorafi-traktotomi, 2 hastaya torakotomi ile bir hastaya abdominal yolla diyafragma tamiri, 3 hastaya metilmeta akrilat mesh kullanılarak göğüs duvarı rekonstrüksiyonu, 1 hastaya internal mamarian arter ligasyonu uygulandı. Masif hemopnömotoraks-abdominal kanama, geniş diyafragma rüptürü ve şok durumunda olan bir hasta intraoperatif kaybedildi. Pulmoner sekel olmadan 24 hastanın 23’ü hastaneden taburcu edildi.

Sonuç: Yüksek kinetik enerjili ateşli silahlar, torakotomi ihtiyacı oluşturan ve daha fazla doku hasarı ile birlikte olan toraks duvarı yaralanmalarına neden olmaktadır. Bundan dolayı özellikle göğüs cerrahisi ile ilgili olmak üzere travma cerrahisi ile ilgili daha fazla bilgiye ihtiyaç olduğunu düşünmekteyiz.

Anahtar kelimeler: *Torasik cerrahi, Savaş, Torakotomi*

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ABSTRACT

Purpose: Thoracic injuries with raised incidence are especially seen at war. We reported our experience of Syrian refugees who were brought to hospital with thoracic trauma within one month.

Methods: We evaluated the clinical records of 24 Syrian refugees (23 men,1 woman) retrospectively who treated in our thoracic surgery clinic in September 2012. All cases were transported to the emergency service by ambulance across the border.

Results: Tube thoracostomy was applied to 17 of cases because of hemopneumothorax. We performed urgent thoracotomy for 8 of 24 cases. Five of 8 cases were taken to operation room without any radiological investigation whose had thoracic wall defect with open thorax and shock condition. Plate fixation of rib was done to one patient who had flail chest and massive hemothorax. Left lower lobectomy in 1 case, pulmonary non-anatomic wedge resection in 4 cases with linear staplers, pneumoraphy- tractotomy in 4 cases, diaphragma repair through thoracotomy in 2 cases and by abdominal route in 1 case, chest wall reconstruction with methyl meta acrylate mersilen mash in 3 cases, left internal mammary artery ligation in 1 case were performed. Intraoperative death was seen at one patient who had massive hemopneumothorax, massive abdominal bleeding and huge diaphragmatic rupture with shock condition. Twenty-three of 24 cases were discharged from hospital without any pulmonary sequela.

Conclusion: High kinetic energy gunshot wounds cause much more tissue damage with thoracic wall involvement which require thoracotomy. We need more information about trauma surgery especially for thoracic surgery.

Key words: *Thoracic Surgery, War, Thoracotomy*

INTRODUCTION

Penetrating and blunt thoracic traumas have high morbidity and mortality rates. Pneumothorax, hemothorax, pulmonary contusion, heart and vascular injuries are life-threatening conditions in thoracic trauma (1-3). Thoracic injuries with raised incidence are especially seen at war. We provide medical support to refugees who injured at war due to proximity to the geography of our country. We reported our experience of Syrian refugees who were brought to hospital with thoracic trauma within one month. The interesting aspect of this study was that although the war has been continued beyond our borders, reflection of medical aspect of the war was seen in a different country.

MATERIALS and METHODS

We evaluated the clinical records of 24 Syrian refugees (23 men,1 woman) retrospectively who were treated in our thoracic surgery clinic in September – 2012 at state hospital. All cases were transported to the emergency service by ambulance across the border. The time interval between injury and hospital arrival was not known. Bullet and shrapnel were causes of injury. Grade 1 burn damage was observed in two of the cases because of explosion. Chest X-ray and computed tomography were used as diagnostic tools. Informed consent was obtained from patients and their relatives by using an experienced translator. Study has been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Tube thoracostomy was applied to 17 of cases because of hemopneumothorax. We performed urgent thoracotomy for 8 of 24 cases. Five of 8 cases were taken to operation room without any radiological investigation whose had thoracic wall defect with open thorax and shock condition. Continued blood leakage from chest tube was cause of thoracotomy for 3 of 8 cases. Two cases with abdominal injuries were operated with general surgery. Diaphragmatic rupture in one case was repaired by abdominal way.

RESULTS

Twenty-four refugees were brought to our state hospital across the Syrian border without any medical or surgical treatment. The mean age was 22 years (range 4-32). We determined multiple bullets and/or shrapnels around the whole body of cases (Table 1). Burn damage was found in two cases. Burn dressing was performed and it was effective. Tube thoracostomy was performed in 17 cases and there was no need to perform any other thoracic surgery procedure for 14 of them. Urgent thoracotomy was done in 8 of 24 cases because of massive hemothorax, continous bleeding from tube, chest wall defect with open thorax and shock conditions. Plate fixation of rib was done to one patient who had flail chest and massive hemothorax. Left lower lobectomy in 1 case, pulmonary non-anatomic wedge resection in 4 cases with linear staplers, pneumoraphy-tractotomy in 3 cases, diaphragma repair through thoracotomy in 2 cases and by abdominal route in 1 case, chest wall reconstruction with methyl meta acrylate mersilen mash in 3 cases, left internal mammary artery ligation in 1 case were performed. Two of the 24 cases were followed for pulmonary contusion with conservative treatment. Five hemiplegic cases were given to physiotherapy programme by the end surgical follow-up period. Intraoperative death was seen at one patient who had massive hemopneumothorax, massive abdominal bleeding and huge diaphragmatic rupture with shock condition. Upper extremity joint

stabilisation was performed in 5 cases by orthopedic surgeons. There were not any postoperative deaths. Nosocomial pneumonia was observed in 5 cases who had hemiplegia. These cases were treated with antibiotics according to culture antibiogram. Twenty-three of 24 cases were discharged from hospital without any pulmonary sequela.

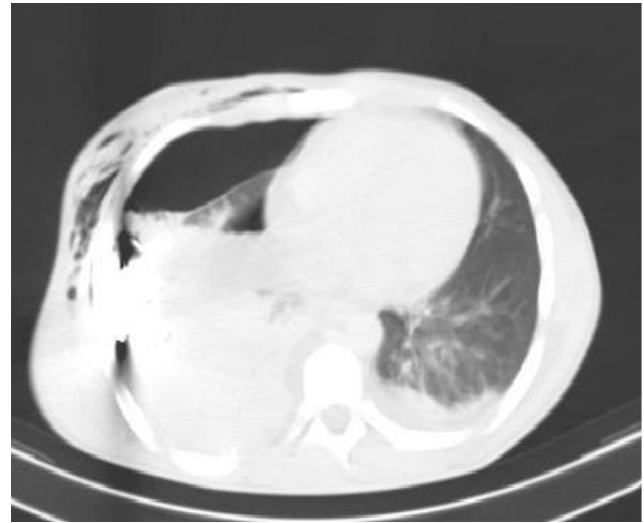


Figure 1. Right hemopneumothorax, subcutaneous emphysema, intrathoracic foreign body (shrapnel)

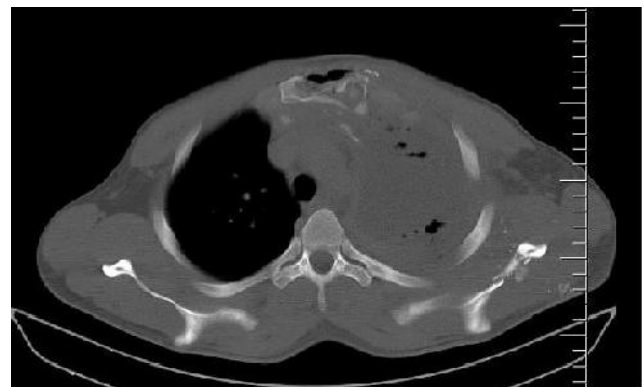


Figure 2. Left massive hemothorax, sternal and scapular fracture (LIMA injury)

Table 1: Pathology and treatment modalities in all patients.

Case	Cause of Injury	Pathology	Treatment
1	Multiple Shrapnels	Multiple rib fractures Hemothorax Splenic rupture Abdominal wall defect	Tube Thoracostomy Laparotomy Abdominal wall reconstruction
2	Bullet	Hemopneumothorax	Tube Thoracostomy
3	Multiple Shrapnels	Hemopneumothorax Hemiplegia	Tube Thoracostomy Neurosurgically inoperable
4	Bullet	Pulmonary Contusion	Follow- Medical treatment
5	Multiple Bullets Burn	Hemopneumothorax Burn	Tube thoracostomy
6	Multiple Shrapnels	Hemopneumothorax Pulmonary contusion Liver Laceration Elbow fracture	Tube thoracostomy Laparotomy Joint stabilisation
7	Multiple Bullets	Hemopneumothorax Scapula-clavícula fracture	Tube thoracostomy Joint stabilisation
8	Bullet	Hemopneumothorax Liver Laceration	Tube thoracostomy Liver repair
9	Bullet	Hemopneumothorax Scapula-clavícula fracture	Tube thoracostomy Joint stabilisation
10	Multiple Shrapnels	Hemopneumothorax Hemiplegia	Tube Thoracostomy Neurosurgically inoperable
11	Multiple Bullets	Hemopneumothorax Hemiplegia+ Scalp laceration	Tube Thoracostomy Neurosurgically inoperable
12	Bullet	Pulmonary Contusion	Follow- Medical treatment
13	Multiple Bullets	Hemopneumothorax Elbow fracture	Tube thoracostomy Joint stabilisation
14	Multiple Shrapnels	Hemopneumothorax Elbow fracture	Tube thoracostomy Joint stabilisation
15	Multiple Shrapnels	Bilateral Hemopneumothorax Kidney injury Hemiplegia	Tube thoracostomy Neurosurgically inoperable Kidney repair
16	Multiple Shrapnels	Hemopneumothorax Abdominal injury Diaphragma rupture	Tube thoracostomy Diaphragma repair Liver repair
17	Multiple Bullets Burn	Hemopneumothorax Flail chest Burning Blindness	Tube thoracostomy Explorative thoracostomy Rib stabilisation with plague
18	Bullet	Hemothorax Chest wall defect	Pulmonary Wedge Resection+Pneumoraphy Chest wall reconstruction
19	Multiple Shrapnels	Hemopneumothorax Clavícula fracture	Tube thoracostomy Pulmonary Wedge Resection+Pneumoraphy Diaphragma repair
20	Multiple Shrapnels	Hemothorax Sternum fracture	Pulmonary Wedge Resection+Pneumoraphy Chest wall reconstruction
21	Multiple Bullets	Pulmoner and Liver Laceration Diaphragma rupture Gastric rupture	Tube thoracostomy Pneumoraphy Diaphragma repair Laparotomy
22	Multiple Bullets	Hemothorax Chest wall defect Hemiplegia	Left lower lobectomy Chest wall reconstruction with greft Neurosurgically inoperable
23	Bullet	Hemopneumothorax	Pulmonary Wedge Resection LIMA Ligation
24	Multiple Shrapnels	Hemopneumothorax Abdominal injury Diaphragma rupture	Thoracotomy Intraoperative Exitus

DISCUSSION

Thoracic traumas without cardiac or mediastinal involvement are usually managed by tube thoracostomy and/or non-operative methods. A small percentage of cases need thoracotomy. The number of requirements for thoracic surgery operations is especially raised in war. The rate of thoracic injuries which require operations changes from 15 to 37% (4,5). 33.3% of Syrian refugees with chest injuries needed thoracotomy. Our rate of urgent thoracotomy is somewhat higher compared to other studies. We think that high kinetic energy gunshot wounds cause much more tissue damage with thoracic wall involvement which require thoracotomy.

The time of surgery after penetrating thoracic traumas is still controversial. Ongoing chest tube drainage and/or 1000 to 1500 ml blood drainage at initial insertion, shock condition, arrest are usually accepted criteria for emergency thoracotomy. We believe that these criteria may vary in case of war. Thoracic surgeon could prefer to perform surgery instead of follow-up chest tube drainage hour by because of the possibility of having much more patients with thoracic injury.

Open thoracic wall defect was found in three cases with damaged lung paranchyma and hemathorax. Ongoing thoracic hemorrhage and shock conditions are accepted indications for operation in the most of the studies about penetrating and blunt chest traumas (4,6). Chest wall reconstruction with graft was performed in 3 cases. Anterolateral thoracic wall defect more than 10 cm² was the criteria for reconstruction decision. Graft use at thoracic wall is a common procedure for malignancies, but traumatic thoracic wall defects are not sterile and we don't have much more information about short term and long term complications of use of grefts. Although there is detailed information about thoracic wall surgery which is usually seen secondary to malignancy, we need more information about trauma surgery.

Parancymal resections could cause high morbidity and mortality rate especially in trauma patients (7-9). Although lung tissue is decreased after resection, total blood volume does not change. It can cause pulmonary hypertension and right ventricular failure. We didn't perform lobectomy or pneumonectomy. We performed wedge resection depending on injury in 4 cases and lobectomy in one case.

We used linear stapler for wedge resections and tractotomy which provides more effective and faster control of bleeding without losing normal lung tissue. By this way, bleeding vessels and airways can be evaluated easily and rapidly.

We observed pneumonia in 5 cases who had hemiplegia at postoperative period. We think that secretion stasis was the primary cause of pneumonia due to immobilisation. Physical therapy should be done to hemiplegic patients and wide spectrum antibiotics and mucolytics might be added to treatment regimens.

CONCLUSION

Importance of thoracic surgery increase especially in war conditions. High kinetic energy gunshot wounds cause much more tissue damage with thoracic wall involvement which require thoracotomy. We need more studies on trauma and war surgery.

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