

ISOLATED INTERNAL MAMMARY ARTERY INJURIES RESULTING FROM STAB WOUNDS : AN UNUSUAL CAUSE OF LIFE-THREATENING HEMOTHORAX

Bıçak yaralanmasına bağlı isole internal mamaryan arter injurisi: Yaşamı tehdit eden hemotoraksın alışılmamış bir sebebi

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Abstract

Background. Anterior thoracic penetrating injuries may result in life-threatening complications. One of these is massive hemothorax as a result of stab wounds to the internal mammary artery.

Methods. We reviewed retrospectively ten cases with isolated internal mammary artery injuries resulting from stab wounds during the period of last ten years. Six patients (60%) were admitted in hemorrhagic shock into emergency room. Urgent thoracotomy was performed in all cases.

Results. Operative findings were nine complete disruption of IMA (3 right and 6 left), and 1 partial one (on the left). Surgical methods were ligation (n=9) and lateral repair (n=1). Average hospitalization time was 7 days. There were no complications or mortality.

Conclusions. Isolated IMA injury may be the unique cause of massive hemothorax. Urgent thoracotomy may be life-saving for patients with hemorrhagic shock due to penetrating thoracic injury.

Key Words: Injury, Internal mammary artery, Stab wounds

Internal mammary artery has blood flow with high-output despite of its small caliber. For this reason, its injuries may cause life-threatening bleeding. We present isolated IMA injuries resulting from parasternal stab wounds.

MATERIAL AND METHODS

We reviewed retrospectively ten cases with isolated internal mammary artery injuries resulting from stab wounds during the period of last ten years.

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Özet

Amaç: Göğüs ön duvarının delici yaralanmaları, yaşamı tehdit eden komplikasyonlara yol açabilir. Bunlardan biri sol meme atardamarı ya da internal mammaryan arterin (İMA) bıçakla yaralanması sonucu olan hemotorakstır.

Gereç ve yöntem: Biz, son on yıl içinde, bıçaklanma sonucu izole İMA yaralanması olan on olguyu gözden geçirdik. Acil servise geldiğinde altı (%60) olguda hemorajik şok vardı. Bütün olgulara acil torakotomi yapıldı.

Bulgular: Operasyon bulgusu, dokuz olguda (6 sol, 3 sağ) İMA kesisi komplet; Bir olguda ise sol İMA parsiyel kesisi vardı. Cerrahi yöntem dokuz olguda ligation, bir olguda lateral onarımdı. Ortalama hastanede kalış zamanı yedi gündü. Mortalite ve morbidite görülmedi.

Sonuç: Sadece İMA yaralanmasının masif hemotoraksın sebebi olabileceği akılda tutulmalıdır. Penetran toraks travmasına bağlı masif hemotoraksta acil torakotomi hayat kurtarıcı olabilir.

Anahtar Kelimeler: Delici kesici alet yaralanması, İMA, Yaralanma

There were 9 male and one female patient (ranging, 18 to 44 years old).

The other patients who had IMA injury together with the other intrathoracic organ injury causing hemothorax were excluded from this article.

RESULTS

It was found that IMA was transected in all cases except one which was cut partially on thoracotomy. Also, the adjacent pleura was cut, which resulted in bleeding into the pleural cavity. Their operative findings were nine complete disruption of IMA (3 right and 6 left), and 1 partial one on the left. Blood amount evacuated from pleural cavity ranged from 0.5 L to 2.2 L. All patients were admitted to

emergency room (ER) immediately after the injury. Six patients (60%) were in hemorrhagic shock on admission. The patients' average systolic blood pressure was 60 mmHg (range, 0 to 90 mmHg). Seven patients had been wounded between second and fifth intercostal space on the left parasternal area, and three wounded similarly on the right. Chest X-ray (figure 1), thoracentesis, and echocardiography were performed for definitive diagnosis. Tube thoracostomy was performed in two patients in ER. These patients' hemorrhagic drainage were 1000 and 1200 ml. Eight patients who had hemorrhagic shock (n=6) and massive hemothorax (n=2) underwent immediate operation without a tube thoracostomy. One of them required cardiac resuscitation before the operation. Anterolateral thoracotomies were performed on wounded hemithorax. Bleeding was stopped by ligation in 9 cases with transected IMA and lateral repair in one case with partial cut. None of them had any extrathoracic injury causing blood loss.

There was no associated intrathoracic organ injury. Average hospitalization time was 7 days. There were no complications and mortality.



Figure 1. Chest X-ray of a case who had right hemothorax due to stab wound

DISCUSSION

Internal mammary artery (IMA) bleedings may be traumatic or spontaneous. The traumatic ones are due to operative, penetrating or iatrogenic injuries (1). Spontaneous IMA ruptures have been reported in patients with IMA aneurysms (2,3). Because flow rates of IMA commonly range from 120 ml to 240 ml/minute, its injuries may result in massive hemothorax. Also, IMA injuries may cause hemomediastinum, pericardial tamponade or arteriovenous fistula (4) In our cases, only IMA bleeding into pleural cavity was seen.

Although delayed massive hemothorax due to internal mammary artery injuries resulting from penetrating trauma have been reported (5), all of our patients had early massive hemothorax requiring "urgent" thoracotomy. Both preoperative medical status and intraoperative findings such as massive intrapleural hematoma and brisk bleeding from injured IMA justified "urgent" thoracotomy. Although a chest tube is an usual procedure for hemothorax, patients with penetrating thoracic injury who had associated with hemorrhagic shock should be taken urgent thoracotomy without it (6). We performed urgent thoracotomy without a tube thoracostomy depending on clinical and radiological findings in 80% of our patients. The remaining patients underwent thoracotomy because their hemorrhagic drainage from chest tube reached 1.0 L and 1.2 L, in one hour, respectively.

The other conditions with parasternal injury causing massive hemothorax such as cardiac injury require promptly surgical intervention as in IMA injury. So, overtime spending for definitive diagnosis is unnecessary. However, chest X-ray and thoracentesis should be performed for the diagnosis of hemothorax. Anterolateral thoracotomy may be preferred in such conditions. In our series, anterolateral thoracotomy was sufficient for the stopping of IMA bleeding, and the inspecting of the other probable injuries in thoracic cavity.

An isolated IMA injury may be the unique cause of massive hemothorax. Urgent thoracotomy is the life-saving procedure for patients with hemorrhagic shock due to penetrating thoracic injury.

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