

Case Report

Bilateral Chest Injury in A Single Gunshot Injury; Right Pleural Breach with An Open Pneumothorax and A Cavitary Chest Wall Wound from An Ak-47- A Case Report

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Abstract

Background: The effect of tissue injury depends not only on the muzzle kinetic energy, the distance from the muzzle to the victim, and the dissipation of the kinetic energy, that is, whether the bullet is retained or passes through the tissue, but also on the type of tissue encountered by the bullet. The type of tissue is key in determining the extent of injury. Muscles are injured more than skin and lung because of high density. A bullet with sufficient kinetic energy will have a cavitary effect in addition to the penetrating track injury. As the bullet passes through the tissue, initially crushing then lacerating, the space left by the tissue forms a permanent cavity. Higher-velocity bullets create a pressure wave that forces the tissues away, creating not only a permanent cavity the size of the caliber of the bullet but also a temporary or secondary cavity, which is often many times larger than the bullet itself. This temporary cavity depends not only on the energy imparted by the bullet to the tissues but also on the density and elasticity of the tissue that it passes through, causing stretches and tears [1].

Objective: Report our experience and outcome with a bilateral chest injury in a single gunshot injury, right pleural breach with an Open Pneumothorax, lung contusion and a cavitary chest wall wound.

Case report: A 28-year-old young man who presented with a bleeding right posterior chest wall wound, difficulty in breathing and haemoptysis following a gunshot injury at a closed range with an AK-47 with entry wound 10 cm below and lateral to inferior angle of left scapular measuring 2 cm × 2 cm that transverse the back posterior to the spine to cause right posterior chest wall open pneumothorax with exist wound 4 cm below and medial to the median border of right scapula, haemoptysis, difficulty in breathing and a cavitary wound extending from right border of the thoracic spine to posterior axillary line with an exist wound measuring 6 cm by 8cm. Cavitary wound measures 15 cm × 18 cm. Patient presented to the A&E two hours after the incidence and cardiothoracic unit was invited to manage this patient. Resuscitation had started before our arrival with vital signs of RR 28 c/min, PR 110 b/m, BP 110/70 mmHg and SPO2 of 84% which improved to RR 22 c/m, PR 82 b/m, BP 120/80 mmHg and SPO2 of 98% after 2L of IVF administered, closed thoracostomy tube drainage was inserted, clot evacuated from the cavitary right poster chest wall wound, debrided and haemostasis secured and cavity packed with gauze and oxygen by nasal catheter. Secondary wound suturing done after two weeks of dressing with saline and pure honey.

Conclusions: Gunshot injury are becoming common with raising hardship from COVID-19 pandemic, job loss, hunger, banditry, kidnapping and breakdown in security apparatus. Prompt and focus management are the goal

Keywords: Bilateral chest injury in a single gunshot injury; Right pleural breach; Open pneumothorax; Lung contusion and right posterior chest wall cavitary wound

Literature

A chest injury is any form of physical injury to the chest including the heart and lungs. Chest injuries account for 25% of all deaths from traumatic injury [1,2]. Majority of chest injuries are caused by blunt mechanisms such as motor vehicle collisions or penetrating

mechanisms such as stabbings. Thus, blunt chest trauma is defined here to include soft tissue trauma and injuries to the bony thorax such as rib fractures and flail chest [3] (Figure 1).

A stab wound is a specific form of penetrating trauma to the skin that results from a knife or a similar pointed object that is "deeper than it wide". However, most stabbings occur because of intentional violence or through self-infliction [4].

Studies have shown that blunt chest trauma is not commonly associated with war or civil strife; however penetrating trauma is [5]. Males are more often the victims than females it occurs commonly in 20 to 40-year age range penetrating chest trauma is most often caused by gunshots [5-11].

Gunshot injury is the commonest cause of penetrating chest trauma as documented in other studies and non-gunshot-related incidents such as stabs, road traffic accidents, and impalements [1-11].

Studies worldwide [6] have also shown that most of these injuries can be managed conservatively [2]. Early recognition and timely treatment of life-threatening injuries, better resuscitative techniques,

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preoperative care, and effective surgical procedures can significantly affect outcomes in these patients.

Globally 10% of all trauma admissions results from chest injuries and 25% of trauma related deaths are attributable to chest injury. In the USA, 25% of the 100,000 annual traumatic deaths result from chest trauma [4] (Figure 2).

In West Africa subregional the incidence is not available but Alain et al. [12] in Cameroon reported an incidence of 65% for blunt and 35% for penetrating chest injury (Figure 3). In Nigeria no round study has been done but figures ranges from 23% to 61% for penetrating chest injury and 38% to 77% for blunt chest injury [6-11].

The aetiology of chest trauma is similar World Wide with little variation penetrating chest injury is mostly caused by gunshot, stab, arrow and impalement while blunt chest injury is caused commonly by motor vehicular accident.

Age, type of chest trauma, early presentation, present of comorbid conditions, present of associated injuries and presence of complication can affect outcome. The mortality rate of patients having chest trauma ranges between 4% and 25% worldwide [6-11].



Figure 1: Exist wound (R) posterior chest wall/ Entry wound left post- Chest wall.



Figure 2: Exist wound.



Figure 3: Showing entry and exist wounds, exist wound and chest tube site wounds. Lastly entry wound with sutures insitu.

Conclusion

Early presentation, adequate resuscitation, immediate chest tube insertion, oxygen administration, adequate analgesics, antibiotics, early wound debridement, dressing and packing of cavitatory chest wall wounds with pure honey are effective in the management of lung contusion, open pneumothorax, cavitatory chest wall wound.

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