Elephant attack – A rare case of survival

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SUMMARY

Conflict of human-wild elephant is not uncommon in Malaysia. Most of the human victims usually succumb to death due to internal organ injuries. Here we report a case of a woman who was the victim of an elephant attack and successfully survived to share our experience in managing this type of polytrauma.

INTRODUCTION

Conflict between human and wild elephant is not uncommon in Malaysia. The consequences range from crop damage to direct attacks on humans.[1] Most of the victims usually succumb to death due to internal organ injuries.[2] We report a case of a woman who was the victim of an elephant attacked and successfully survived to share our experience in managing this type of polytrauma.

CASE PRESENTATION

A 34-year old female veterinarian was brought to the emergency department (ED) of a district hospital in Kelantan, Malaysia after an unfortunate event while on an operation to transfer out a wild elephant that strayed out of the jungle to the plantation crops in a village. During the process of transferring, the officers from Wildlife and National Parks Department, also known as *'Perhilitan'* in Malay, lost control of the elephant after it was awakened from the initial tranquilizer dose. The elephant was estimated to be more than 30 years of age, weighing approximately 2.5 tonnes had immediately attacked the veterinarian and she was trampled two times on her chest. The veterinarian sustained pain over the entire chest, right shoulder and abdomen. She had difficulty in breathing and felt dizzy. She was able to move all four limbs but could not ambulate due to the severe pain. She had no loss of consciousness and was helped by the other *'Perhilitan'* officers. The victim was immediately taken to the hospital by the officers with a four-wheel drive vehicle and arrived at the district hospital around 30 minutes later.

On arrival to the Emergency Department of a district hospital, she was fully conscious with her airway and cervical spine were intact. However, her breathing and circulation were compromised. She was tachypnoeic with SpO_2 was 83% under room air. There were multiple bruises over the chest and abdomen with bilateral generalised anterior chest tenderness on palpation. Examination of the right lung field revealed hyper resonance on percussion and reduced air entry on auscultation. The trachea was found to have deviated to the left side. On further examination of haemodynamic status, she was in shock with a blood pressure of 60/40 mmHg and a pulse rate of 120 beats per minute. She was pale and cold peripherally with delayed capillary refill time. Her abdomen findings were generalised tender and guarded. Surgical-based teams such as surgery and orthopaedic were alerted respectively as there was no Trauma Code at the centre. The anaesthesia team was also activated to help in resuscitation.

Chest X-ray showed right pneumothorax, multiple rib fractures bilaterally, right scapular fracture, posterior wall of right acetabulum fracture and 3rd to 4th thoracic spinous process fractures. Computed tomography (CT) scan of the thorax, abdomen and pelvis showed multiple intrabdominal injuries; grade 2 liver injury, grade 2 splenic injury, grade 2 to 3 pancreatic injury and grade 3 left renal injury.

Damage control resuscitation was initiated. She was transfused with 1 Litre of normal saline and early blood products was instituted. Intravenous tranexamic acid was also administered. Other than that, a chest tube was inserted at the right lung due to haemopneumothorax. Initial discussion between the surgeons in the district hospital and tertiary centre was to continue conservative management as her condition was haemodynamically stable after the resuscitation. Day 1 post-trauma, her condition worsened. She became more tachypnoeic and required non-invasive ventilatory support. She developed acute respiratory distress syndrome (ARDS) and was intubated on day 3 post-trauma. Repeat CT scan showed complete transection of the pancreas (Figure 1). She was referred to Hospital Universiti Sains Malaysia (USM), a tertiary hospital located 70 km away from the district hospital for further surgical intervention.

At the tertiary hospital, diagnostic peritoneal lavage (DPL) was done, and 1 litre of blood was evacuated. The DPL aimed to reduce the inflammatory effect caused by the spillage of pancreatic fluid. No faecal material or bilious content visualised during the procedure. As a result, she was planned for exploratory laparotomy and distal pancreatectomy with

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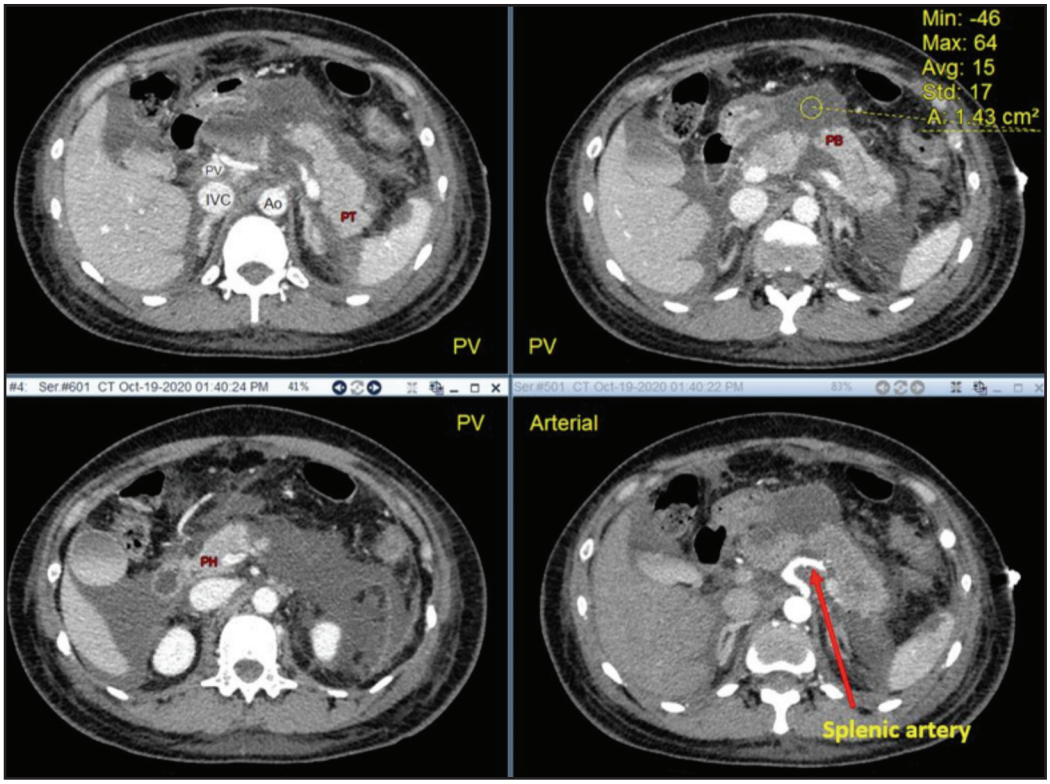

Fig. 1: CT abdomen with contrast in portovenous (PV) and arterial phases show complete transection of the pancreatic body (PB). The pancreatic head (PH) and pancreatic tail (PT) are still enhanced. There is generalised free fluid mixed with haemoperitoneum as demonstrated at the peripancreatic region (max density 64 Hounsfield unit). Splenic artery is still enhanced with no evidence of active contrast extravasation. Lacerations of the liver and spleen are partially visualised. Inferior vena cava (IVC) and aorta (Ao) are normal in size. No bowel wall thickening or pneumoperitoneum.

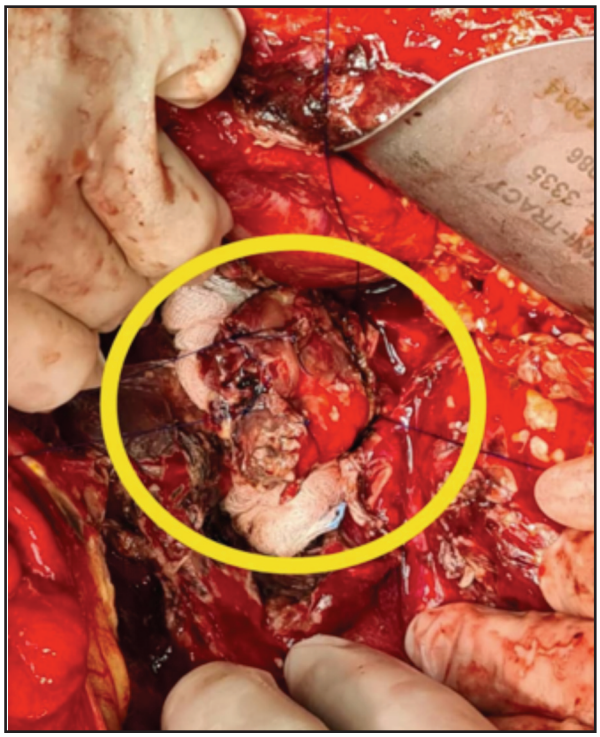

Fig. 2: Intra-operative findings of transected pancreas at the body with necrotic area.

splenic preservation. Intraoperatively, the pancreas was discovered to be transected at the body with the necrotic area and retroperitoneal haematoma (Figure 2). Post-operatively, she suffered from a surgical site infection and was administered antibiotics. She underwent slow weaning of the ventilator and was eventually extubated after 14 days of ventilation. She was discharged at one-month post-trauma with follow-up for regular wound inspection and dressing.

DISCUSSION

Human-elephant conflict occurs as a result of habitat loss due to the expansion of human settlements and agricultural activities.[3] However, most of the fatal attacks occurred outside the habitat like zoos, circuses and arenas.[4] There are 19 cases of fatal elephant attack reported, mainly in India, followed by Germany, Czech Republic and Australia.[2,4,5,6] Only one case of elephant attack survivor reported in the United States of America who underwent 30 operations during her 3 months of hospitalisation.[7]

Attributable to the extreme weight difference between humans and elephants, whose weight may go up to four tons, it potentiates to cause fatal injury and danger in relation to humans.[3] Fatal injuries can also be caused by the mechanism of trampling-stomping.[3] The main targeted area in the human are the head and torso.[6] The type of injuries varies from severe maxillofacial trauma[4], perforating lacerated tusk injury of the chest with multiple rib fractures[2],

blunt intra-abdominal trauma including bowel transection, liver and abdominal aorta lacerations as well as pelvic fractures.[3] The most common cause of death is due to haemorrhagic shock.[3]

In this particular case, the mechanism of attack by the elephant was trampling when the elephant was suddenly awakened. The veterinarian sustained blunt polytrauma, almost similar to the type of injury in other fatal cases of elephant attack. Damage control resuscitation is part of the management in this type of polytrauma, followed by conservative management. Conservative management or nonoperative management was decided after haemodynamic stability was achieved, together with findings from the imaging modalities.[8]

However, as her condition worsened and a repeat CT scan showed complete transection of the pancreas, she was referred to the Hospital USM for operative management. The decision for the operative management in blunt pancreatic injury is always difficult as only those who have pancreatic duct transection should go for the surgery. Unnecessary surgery in non-complicated pancreatic injury especially in grade 1 and 2 may result in a worse outcome of post-operative pancreatitis.[9] Unfortunately, most of the pancreatic duct transections are not easily visualised during early CT scans and in fact, patients are haemodynamically stable in the first 24 hours. As pancreatic juice spills over the retroperitoneal space, it will fill up the gap between the transection line and will be seen clearly at 72 hours as demonstrated in our patient. The spillage of the pancreatic juice at this time also increases the inflammatory response with haemorrhagic changes and the development of sequelae like acute respiratory distress syndrome and compartment syndrome. These conditions would justify the need for high morbidity surgery.[10]

CONCLUSION

Polytrauma due to elephant attack is common and the cause of death is attributed to traumatic shock. Attending physicians should always have a high index of suspicion for intraabdominal injury in the case of elephant attack even in haemodynamically stable patients as hollow organ injuries usually present late. An early intervention like damage control resuscitation and early referral for definitive treatment is vital in saving the life of the victim. The clinician should also be aware that when pancreatic injuries are managed conservatively, the clinical, radiological and laboratory parameters need to be monitored until resolution.

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CONFLICT OF INTEREST

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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