

Seat Belt Sign and Its Significance

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ABSTRACT

Safety belts are the most important safety system in motor vehicles and when worn intend to prevent serious injuries. However, in unusual circumstances (high velocity motor vehicle collisions) these safety measures (seat belts) can be the source and cause of serious injuries. The seat belt syndrome was first described as early by Garrett and Braunste in but the term “seat belt sign” was discussed by Doersch and Dozier. Medical personnel’s involved in emergency care of trauma patients should be aware of seat belt sign and there should a higher index of suspicion to rule out underlying organ injuries.

Keywords: Seat belt, seat belt injury, seat belt sign

Introduction

Safety belts are the most important safety system in motor vehicles and when worn intend to prevent serious injuries.^[1-3] Seat belts reduce the severity of injury caused by restraining vehicle occupants and thus preventing them from hitting objects or being ejected through windows.^[4] It has estimated that up to 50-80% of all deaths could have been prevented by properly used a seat belt.^[5] However, in unusual circumstances (high velocity motor vehicle collisions) these safety measures (seat belts) can be the source and cause of serious injuries.^[6-9] Kulowski and Rost^[10] in 1956 first described seat belt-related injuries. Garrett and Braunstein^[8] described the “seat belt syndrome” as early in 1962, but Doersch and Dozier^[9] discussed the term “seat belt sign” in 1968. In the present article, we describe an illustrative case of seat belt injuries and review the relevant literature.

Case Report

A 54-year-old gentleman presented with a history of road traffic accident while he was travelling in car got smashed into one pillar. All three fellow passengers were safe. He had history of transient loss of consciousness. There was no history of

vomiting, ear, nasal bleed or convulsions. He was complaining of back pain radiating to left lower limb. There was chest pain. There was no pain abdomen. He was a known hypertensive on regular medication. Magnetic resonance imaging lumbosacral spine showed mild L4-5 prolapsed intervertebral disc (PIVD) with left nerve root compression. X-ray chest, abdomen and pelvis were normal. Computed tomography scan chest showed mild pleural effusion on the right side. Ultrasound abdomen was normal. Color Doppler for neck vessels was normal. Local examination revealed an oblique bruise in the neck and another bruise in the right flank (diagonally opposite to the neck bruise) suggestive of seat belt-related injury [Figure 1]. Patient was managed conservatively and did well.

Discussion

The seat belt sign is characterized by patterned bruising on the chest or abdominal wall corresponding to the position of the diagonal or horizontal strap of the seat belt^[11] and can extend to the neck indicating underlying vascular injury. Many studies have demonstrated the association of the seat belt sign and injuries to the neck and chest organs injuries^[3] to the lumbar spine, the abdominal organs and its mesentery.^[1,3,11] It has been concluded that seat belt sign appears to be associated with an increased risk of underlying visceral injuries^[12] and front seat passengers presenting with seat belt signs are more than twice as likely to sustain intra-abdominal

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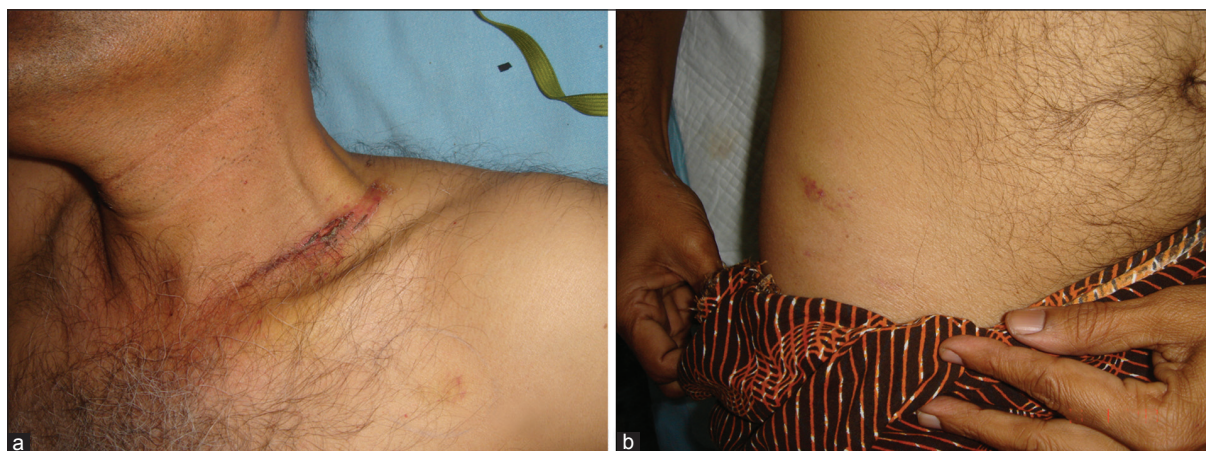


Figure 1: (a) Clinical image showing neck seat belt sign (diagonal abrasions are present along the course of the shoulder strap) and (b) as mall right flank abrasion (abdominal seat belt sign) a in the patient, who was seated on the passenger side of the car

injury.^[1] The presence of these at belt sign should alert the physician to the high likelihood of specific internal injuries.^[11] It has been demonstrated that out of 117 injured patients, 12% had a seat belt sign, of which 64% had abdominal injury and in the absence of seat belt sign there were fewer abdominal injuries.^[3,6,13] Abdominal seat belt sign is not an incontrovertible sign of significant internal injuries^[3] it has a sensitivity of 25% and specificity of 85%.^[6] Patients with a seat belt sign, but without abdominal pain or tenderness appear to be at low risk for intra-abdominal injuries.^[14] A high index of suspicion with a low threshold for appropriate diagnostic valuation and/or surgical exploration is recommended for the optimal management of these patients with seat belt sign.^[11] Cervical seat belt sign after motor vehicle collision prompt to perform a more thorough examination^[15] as it can be an indicator of injury to cervicothoracic vessels.^[16,17] However, mere presence of cervical seat belt sign should not serve as a sole indicator for evaluation of the carotid artery unless there is the presence of other pertinent signs or symptoms.^[18]

Conclusion

Seat belt signs remain an important physical finding following motor vehicle crashes.^[1] Medical personnel's involved in emergency care of trauma patient should be aware of seat belt sign and there should a higher index of suspicion to rule out underlying organ injuries.

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