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Case report

Fall from height: a case report

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Summary. The manuscript reports the case of a 16-year-old boy who fell from a height of 15 meters while having a cellphone conversation. Surprisingly, only minor injuries were reported. Prognostic factors related to falls from height are still debated; the present case is a further contribution to the discussion. (www.actabiomedica.it)

Key words: accidental falls; survival

Prognostic factors related to falls from height are still a matter of debate and even the intuitive relation between the height and mortality rate has been questioned (1).

In order to give a further contribution to the debate, we describe the case of a 16-year-old boy who survived after an accidental fall from a height of 15 meters.

Case presentation

The manuscript reports the case of an accidental fall from a height of 15 meters. The victim was a 16-year-old healthy boy who was having a cellphone conversation while walking in a room at the 5th floor of an old building.

Not paying attention to the surrounding environment, the victim unknowingly approached a low window and eventually fell out of the window, landing on concrete.

Upon arrival of the EMS team, the patient was conscious and only limbs' distal deformities could be detected at a preliminary assessment. The patient appeared cooperative, slightly confused (GCS 14), oriented in time and space; pupils were equal, round and reactive to light. A cardiopulmonary and abdominal objective examination failed to detect any abnormality; the pelvis was stable and femurs were in axis. Both the ankles and the left wrist appeared roughly deformed. Vital signs were normal (Blood Pressure 140/80 mmHg; Pulse 98 bpm; Oxygen Saturation 96%); motor function and sensitivity to pinprick were preserved.

The patient was immobilized and moved to the hospital, where a total body CT scan showed 2 minor bilateral subdural hematomas on temporal lobes, an L3 vertebral body burst fracture, several lung consolidated areas due to pulmonary contusions and a minor pneumothorax. An X-ray study of the extremities was then performed, revealing complex fractures of the left wrist, the midfeet and the hindfeet. The Injury and Severity Score (ISS) was 50. During the following week the patient underwent 4 orthopaedic surgeries; after one month he was dismissed from the hospital and moved to a rehabilitation centre.

A legal investigation was carried out at the accident scene, revealing that the height of the window - 75 cm - didn't comply with current Italian safety regulations.

Discussion

Several studies dealing with the issue of falls from height have been conducted, revealing that cases of accidental falls are not so rare.

However, one might be surprised of the minor lesions reported by the victim of the described case, expecting a greater impact from a 15-meter fall on a hard surface and considering the reported ISS value.

Lapostolle et al. (2) demonstrated that mortality correlated with both height and hard impact surface. In their retrospective study the median height of fall in patients who died was 15 meters; mortality rate among patients fallen from 15 meters was approximately 72%. On the other hand, the study revealed that mortality was extremely low (5,6%) when victims landed on their lower extremities.

According to the lesions suffered by the victim of the described fall, we may speculate that he landed on his feet. Consequently, the reported minority of injuries despite the height of fall and the impact surface may be justified by the position of the body at landing and the consequent distribution of impact forces. This hypothesis is consistent with other scientific evidences, according to which the highest incidence of survival in falls is associated with feet-first vertical impacts (3) and deaths among patients sustaining a calcaneal fracture are uncommon (4).

A further possible explanation may be provided by the young age of the patient. In fact, several studies have shown that young individuals in good physical condition are more likely to survive falls because of their more flexible skeletons, relaxed muscle tone and greater proportion of body fat (5-8).

An analysis of the described fall shows that many factors seem to have contributed to it.

A lack of renovation of the building, not in conformity with safety guidelines, was undoubtedly important. This correlates with previous studies, where the absence of architecture code regulations or their failed application were described as risk factors for falls from windows and balconies (9-11). On the other hand, the carelessness of the victim – with the use of a mobile phone contributing to it - seems to have played an important role.

References

1. Goodacre S, Than M, Goyder EC, Joseph AP. Can the distance fallen predict serious injury after a fall from a height? J Trauma 1999; 46: 1055-8.
2. Lapostolle F, Gere C, Borron SW, Pétrovic T, Dallemagne F, Beruben A, et al. Prognostic factors in victims of falls from height. Crit Care Med 2005; 6: 1239-42.
3. Snyder RG. Human tolerances to extreme impacts in free fall. Aerospace Med 1963; 8: 695-7.
4. Teh J, Firth M, Sharma A, Wilson A, Reznek R, Chan O. Jumpers and Fallers: a Comparison of the Distribution of Skeletal Injury. Clinical Radiology 2003; 58: 482-48.
5. Smith MD, Burrington JD, Woolf AD. Injuries sustained in children in free falls: an analysis of 66 cases. J Trauma 1975; 15: 987-91.
6. Sieben RL, Leavitt JD, French JH. Falls as childhood accidents: an increasing urban risk. Paediatrics 1971; 47: 886-92.
7. Musemeche CA, Barthel M, Cosentino C, Reynolds M. Pediatric falls from heights. J Trauma 1991; 31: 1347-9.
8. Roshkow JE, Haller JO, Hotson GC, Sclafani SJ, Mezzacappa PM, Rachlin S. Imaging evaluation of children after falls from a height: a review of 45 cases. Radiology 1990; 75: 359-63.
9. Istre GR, Mc Coy MA, Stowe M, Davies K, Zane D, Anderson RJ, et al. Childhood injuries due to fall from apartment balconies and windows. Inj Prev 2003; 9: 349-52.
10. Lehman D, Schonfeld N. Falls from heights: a problem not just in the northeast. Pediatrics 1993; 92: 121-4.
11. Mayer L, Meuli M, Lips U, Frey B. The silent epidemic of falls from buildings: analysis of risk factors. Pediatr Surg Int 2006; 22: 743-8.

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