

## Tyre tread marks on the body without internal injuries

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**Summary.** Two cases are presented involving a 5-year-old boy with tyre tread impressions on the back and right arm and a 4-year-old girl with tread marks on the head but both had no internal injuries. These cases suggest that injuries to internal organs do not always occur when the trunk or head is run over by the wheels of a vehicle.

**Key words:** Traffic accident – Run over injury

**Zusammenfassung.** Ein 5jähriger Knabe mit dem Abdruck eines Lkw-Reifenprofils auf Rücken und rechtem Arm und ein 4jähriges Mädchen mit dem Abdruck von einem Pkw-Reifenprofil auf dem Kopf ohne innere Verletzungen werden vorgestellt. Die Fälle zeigen, daß es nicht immer zur Zerreißung von Organen des Brust-, Bauch- oder Kopfraumes kommen muß, wenn der Rumpf oder der Kopf überrollt wurde.

**Schlüsselwörter:** Verkehrsunfall – Überrollverletzung

### Introduction

It is well known that if a person is run over by a vehicle a crushing type of trauma occurs. Severe crushing injuries of organs usually occur and are as a rule, obvious [1, 2] but the severity depends on the weight of the vehicle and its ground clearance [3].

However, authentic cases of running over have also been described in which “jumping” of the wheels has occurred, thus reducing the extent of crushing injuries to a minimum and involving only one side of the body [3]. However cases such as the 2 reported here with tyre tread marks on the body but no internal injuries have not been reported.

### Case reports

*Case 1.* In 1978, a 5-year-old boy was playing with a ball, which rolled under a 2ton-truck (Fig. 1). He crawled under the truck to

take the ball with his hand. At that moment the truck started and its left rear tyre ran over his back and right arm. Afterwards he stood up by himself and could walk. He had tyre marks and small abrasions on his back and right arm (Fig. 2). Despite detailed physical examination no internal injuries would be found. The child is now 18 years old and in apparent good health.

*Case 2.* In 1979, a 4-year-old girl who had been playing behind a 1ton passenger car (Fig. 3) fell to the ground and the car was dri-



**Fig. 1.** 2ton-truck, whose left rear tyre ran over a 5-year-old boy



**Fig. 2.** Tyre tread mark and abrasions on the back and right arm of the 5-year-old boy



**Fig. 3.** 1-ton-passenger car whose left rear tyre ran over a 4-year-old girl

ven backwards over the child. The driver got out of his car and saw the child lying in front of the left rear tyre. The medical examination revealed a tyre tread mark on the right side of her head and small abrasions on the left jaw, but no internal injuries. The girl is now 16 years old, and in good health.

## Discussion

A detailed report on the mechanisms of running over has been carried out by Kassai [4]. He reported that when the head is run over a burst fracture of skull occurs and that running over the trunk can cause rib fractures, thoracic and lumbar spine fractures and crushing injuries of organs in the thoracic and the abdominal cavities [5, 6]. These injuries can assist the investigation to determine whether the victim was run over or not [7]. In the 2 cases described here no internal injuries were found despite the fact that the victims were run over in the trunk or head regions and show that these types of accidents may not always cause crushing injuries of the organs in cranial, thoracic or abdominal cavities.

Both cases were children, a 5-year-old boy and a 4-year-old girl and it is known that fractures must not

necessarily occur in young people despite being run over by a vehicle [5]. It is possible that the young age of the victims in the present cases played an important role in the lack of internal injuries. In addition, both children were run over by the rear tyre of a vehicle that slowly started to roll. Schmidt ascertained that some of the load added by a tyre to the body is reduced by the lift of the tyre when the body is run over slowly [8] and this could be the explanation in the 2 cases described here.

Since it can be seen from the photograph in the first case that tyre marks on the left back are missing (Fig. 2), it would seem that an incomplete running over has occurred. This could explain the survival of the child and lack of severe injuries. In the second case, the facts were confirmed by an ambulance man, a police officer and a medical doctor, but unfortunately no photographs were taken to document the observations.

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