DOI: https://doi.org/10.24061/2707-8728.1.2026.7
UDC 340.6+616-001-053.2:656.08

FEATURES OF FORENSIC EXAMINATIONS RELATED TO THE STUDY OF THE MECHANISM OF CHILD TRAUMA RESULTING FROM THE USE OF ELECTRIC SCOOTERS

Yuliia Kotsiubynska, Nataliia Kozan, Valeriia Chadiuk

Ivano-Frankivsk National Medical University, Ministry of Health of Ukraine, Ivano-Frankivsk, Ukraine

Abstract. Forensic medical examination of injuries sustained from the use of electric scooters in children requires a detailed study of injury mechanisms to correctly classify the injuries and establish causal relationships. Understanding the specifics of the interaction between the child's body and an electric scooter in various traumatic situations is critically important for forensic practice.

The aim of the study. To systematize the features of forensic examination of child injury mechanisms from electric scooters and to identify characteristic morphological signs for different types of traumatic situations.

Materials and methods. An analysis of forensic medical data from 50 injured children aged 4-18 years was conducted using anthroposcopic, morphological, radiological diagnostic methods, biomechanical modeling of traumatic situations, and statistical analysis. Statistical analysis of the obtained data was performed using Microsoft Excel 2019 / IBM SPSS Statistics 26.0. Given the nature of the study (analysis of medical documentation) and the type of data obtained, descriptive statistical methods were used. Absolute and relative frequencies (n, %), distribution of indicators by age groups and sex were calculated. The non-parametric Pearson's chi-squared (χ^2) test was applied to compare frequencies between groups. Differences were considered statistically significant at $p<0.05$.

Scientific research. This study was carried out within the framework of the research work of the Department of Forensic Medicine, Medical and Pharmaceutical Law of IFNMU "Comprehensive forensic medical assessment of trauma and injuries in children" (state registration number: 0124U001982).

Bioethics. The study was approved by the Ethics Committee of IFNMU (Protocol No. 143/24, dated 20.03.2024).

Results. Eight main injury mechanisms were identified with characteristic localizations and types of injuries. The most common mechanism is a forward fall (34%), leading to fractures of the distal radius (56% of cases of this mechanism). A correlation was established between speed, child's age, and injury localization.

Conclusions. The systematization of injury mechanisms enables higher-quality forensic medical examinations with well-founded determination of injury circumstances. The developed schemes can be used in forensic practice and preventive work.

Keywords: forensic medical examination, injury mechanism, child trauma, electric scooters, trauma biomechanics.

ОСОБЛИВОСТІ ЕКСПЕРТНИХ ДОСЛІДЖЕНЬ, ПОВ'ЯЗАНИХ ІЗ ВИВЧЕННЯМ МЕХАНІЗМУ ДИТЯЧОЇ ТРАВМИ, ОТРИМАНОЇ ВНАСЛІДОК ЕКСПЛУАТАЦІЇ ЕЛЕКТРИЧНИХ САМОКАТІВ

Юлія Коцюбинська, Наталія Козань, Валерія Чадюк

Івано-Франківський національний медичний університет МОЗ України, Івано-Франківськ, Україна

Резюме. Судово-медична експертиза травм, отриманих внаслідок експлуатації електричних самокатів у дітей, вимагає детального вивчення механізмів травмування для правильної кваліфікації ушкоджень та встановлення причинно-наслідкових зв'язків. Розуміння особливостей взаємодії дитячого організму з електричним самокатом у різних травматичних ситуаціях має критичне значення для експертної практики.

Мета дослідження. Систематизувати особливості експертного дослідження механізмів дитячої травми від електричних самокатів та визначити характерні морфологічні ознаки для різних типів травматичних ситуацій.

Матеріали та методи. Проведено аналіз судово-медичних даних 50 постраждалих дітей віком 4-18 років з використанням методів антропоскопії, морфології, променевої діагностики, біомеханічного моделювання травматичних ситуацій та статистики.

Науково-дослідна робота. Дане дослідження проводили в рамках науково-дослідної роботи кафедри судової медицини, медичного та фармацевтичного права ІФНМУ «Комплексна судово-медична оцінка травми та травматизму у дітей» (номер державної реєстрації НДР: 0124U001982).

Біоетика. Дослідження схвалено комісією з питань етики ІФНМУ (протокол № 143/24 від 20.03.2024 р.).

Результати дослідження. Виділено вісім основних механізмів травмування з характерними локалізаціями та типами ушкоджень. Найчастішим механізмом є падіння вперед (34%), що призводить до переломів дистального відділу променевої кістки (56% випадків цього механізму). Встановлено залежність між швидкістю руху, віком дитини та локалізацією травм.

Висновки. Систематизація механізмів травмування дозволяє проводити якісніші судово-медичні експертизи з обґрунтованим встановленням обставин травми. Розроблені схеми можуть використовуватись для експертної практики та профілактичної роботи.

Ключові слова: судово-медична експертиза, механізм травми, дитяча травма, електричні самокати, біомеханіка травми.

Introduction. The growing popularity of electric personal mobility devices among children and adolescents is accompanied by a dramatic increase in the number of injuries, which is acquiring the character of a new epidemic in pediatric traumatology [1, 2]. Forensic medical examination of such injuries has its own features related to the need to establish the exact injury mechanism, which is critically important for the legal qualification of the event and the establishment of causal relationships.

Studies by Cohen et al. (2021) [3] and Avrahamov-Kraft et al. (2022) [4] revealed specific trauma patterns in the pediatric population that differ substantially from similar injuries in adults. Understanding the injury mechanism is particularly important for the correct interpretation of the morphological signs of injuries.

The mechanism of injury determines the localization, nature, and severity of injuries. Blomberg et al. (2019) [5] and Cicchino et al. (2021) [6] established a direct relationship between trip characteristics and the type of injuries sustained. Systematization of injury mechanisms allows an expert to reconstruct the circumstances of an event with high probability even in the absence of witnesses.

The aim of the study is to systematize the features of forensic examination of child injury mechanisms from electric scooters and to identify characteristic morphological signs for different types of traumatic situations, which will improve the quality of forensic medical examinations.

Materials and methods. The study material consisted of forensic medical data from 50 injured children aged 4 to 18 years, obtained from inpatient records of the Municipal Non-Profit Enterprise “Ivano-Frankivsk Regional Children’s Clinical Hospital” and during forensic medical examinations conducted in the period 2022-2024. Age groups: 4-6 years (8 individuals), 7-9 years (2 individuals), 10-13 years (18 individuals), 14-18 years (22 individuals). A set of methods was used: anthroposcopic, morphological, radiological diagnostic methods (radiography, computed tomography), biomechanical modeling of traumatic situations, and statistical analysis.

Statistical analysis of the obtained data was performed using Microsoft Excel 2019 / IBM SPSS Statistics 26.0. Given the nature of the study (analysis of medical documentation) and the type of data obtained, descriptive statistical methods were used. Absolute and relative frequencies (n, %), distribution of indicators by age groups and sex were calculated. The non-parametric Pearson’s chi-squared (χ^2) test was applied to compare frequencies between groups. Differences were considered statistically significant at $p<0.05$.

For each case, a detailed analysis of the injury mechanism was conducted based on interviews with the injured, witnesses of the event, and objective data. Biomechanical modeling was performed taking into account the anthropometric features of children of different age groups, the speed of the electric scooter, and the characteristics of the body’s interaction with the road surface.

Scientific research. This study was carried out within the framework of the research work of the Department of Forensic Medicine, Medical and Pharmaceutical Law of IFNMU "Comprehensive forensic medical assessment of trauma and injuries in children" (state registration number: 0124U001982).

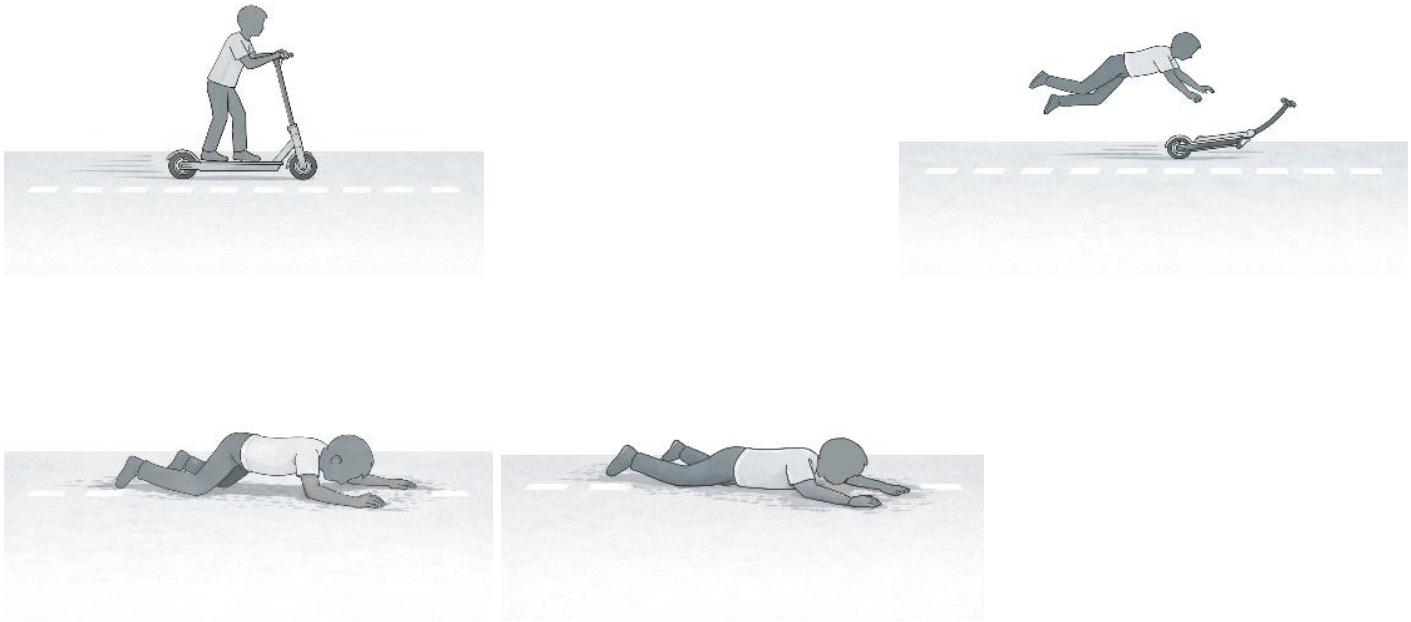
Bioethics. The study was approved by the Ethics Committee of IFNMU (Protocol No. 143/24, dated 20.03.2024)**.**

Results. Based on the analysis of 50 trauma cases, six main mechanisms of child injury during the operation of electric scooters were identified, each characterized by specific morphological manifestations and injury localizations.

The most common injury mechanism was a fall from a moving electric scooter, observed in 68% of

cases (34 victims), subdivided into three main variants depending on the direction of fall.

Forward fall occurred in 34% of all cases (17 victims). The general initial position is characterized by the child standing on the electric scooter deck with both feet (one foot in front, the other behind), holding the handlebars with both hands, while the scooter moves forward horizontally on the road surface at a speed of 15-25 km/h in the studied group. The main causes of the fall were sudden braking (47% of cases of this mechanism), shifting the center of gravity forward when attempting to increase speed, excessive forward tilt of the torso, and loss of balance due to road surface unevenness. The injury mechanism unfolds as follows: the child loses balance with a forward tilt of the torso, the child's body detaches from the scooter deck and flies by inertia forward-downward at an angle of approximately 30-45° to the horizontal, the hands release the handlebars or the child flies over the handlebars, the scooter continues to move forward separately or falls to the side, while the speed of body flight depends on the initial speed of the scooter. The sequence of contact with the road surface has a clear pattern: first, contact occurs with the palms of the outstretched hands (a protective reaction observed in 94% of cases), then the wrists and forearms, knees (if the legs are bent during the fall), face, forehead (with insufficient hand protective reaction in 41% of cases), chest and abdomen, with possible sliding on the asphalt on the abdomen observed in 29% of cases (Fig. 1a, b, c, d). Typical injuries from this mechanism include fractures of the distal radius in the typical location (56% of cases of this mechanism, most commonly a Colles extension fracture), abrasions on the palms localized on the palmar surface of the thenar and hypothenar eminences, wrist injuries (ligament sprains – 35%), facial trauma in the form of contusions of the facial soft tissues, fractures of the nasal bones (24%), dental injuries (18%), traumatic brain injury of varying severity (concussion – 47%, mild brain contusion – 29%), abrasions of the knees with characteristic localization on the anterior surface, and chest contusions.

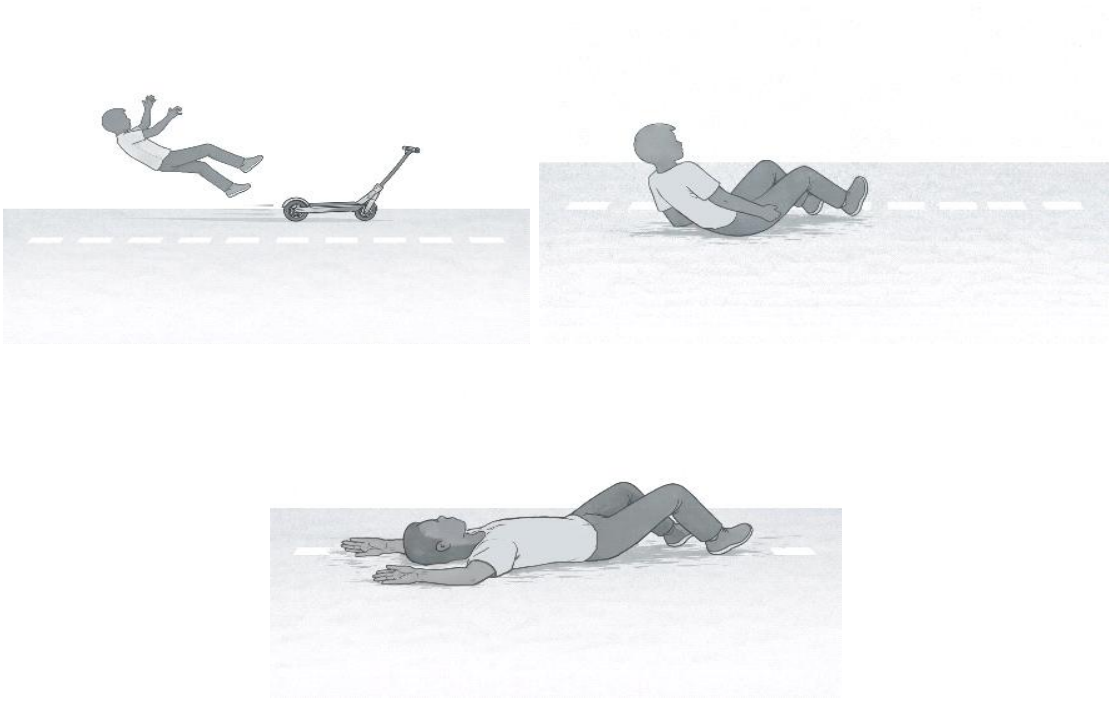


a) b) c) d)

Figure 1: a, b, c, d. Schematic illustration of the forward fall mechanism from an electric scooter.

Backward fall was observed in 20% of all cases (10 victims). The causes of the fall were sudden scooter acceleration (60% of cases of this mechanism), backward tilt of the torso upon loss of balance, loss of footing on the deck, and forward sliding of the feet on the deck due to inertia. The injury mechanism is characterized by the center of gravity shifting backward beyond the support area, the child falling backward-downward along an arc with a fall height corresponding to the child's height, the hands releasing the handlebars, the body flying backward with possible rotation around the transverse axis, and the scooter potentially continuing forward without control or falling. The sequence of contact with the road surface begins with an impact on the buttocks or sacral area, followed by the lumbar region of the back, the interscapular region, the occiput or the back of the head, and a possible blow to the elbows when trying to protect oneself (observed in 50% of cases) (Fig. 2a, b, c). Typical injuries include contusions of the soft tissues of the gluteal region (90% of cases), compression fractures of the lumbar vertebrae (20% of cases, most commonly L1–L2), traumatic brain injury with a characteristic localization – brain contusion in the

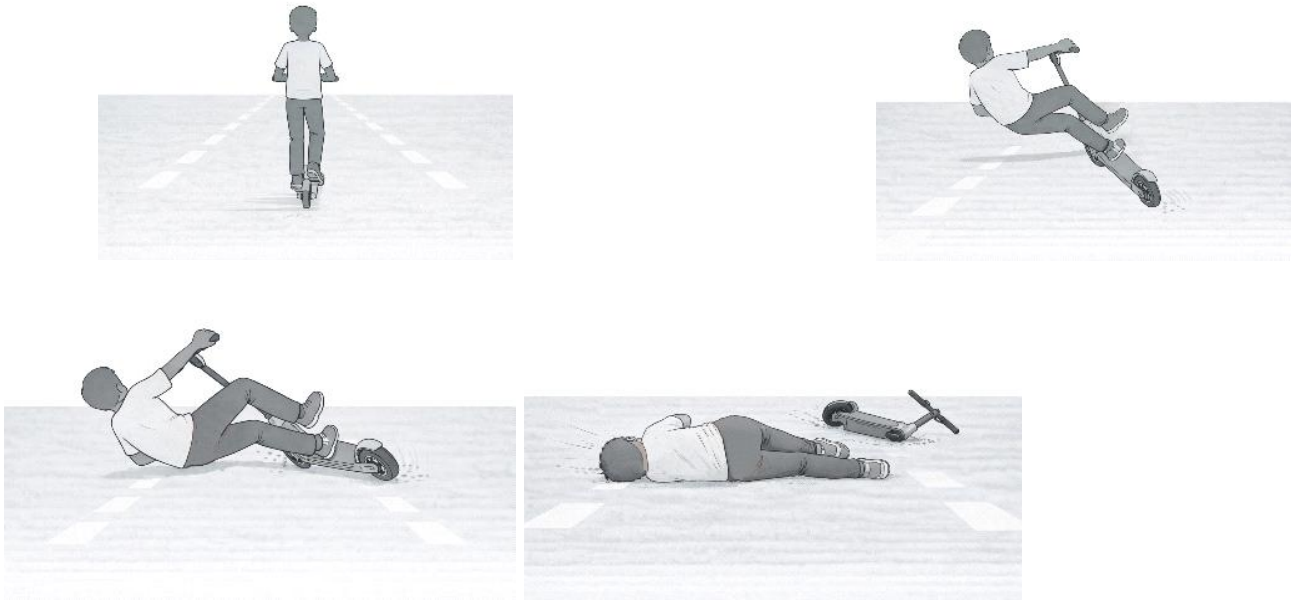
occipital area with a contrecoup injury in the frontal region (70% of cases of this mechanism), fractures of the olecranon (30% of cases), and subarachnoid hemorrhages in the occipital region.



a) b) c)

Figure 2: a, b, c. Schematic illustration of the backward fall mechanism from an electric scooter.

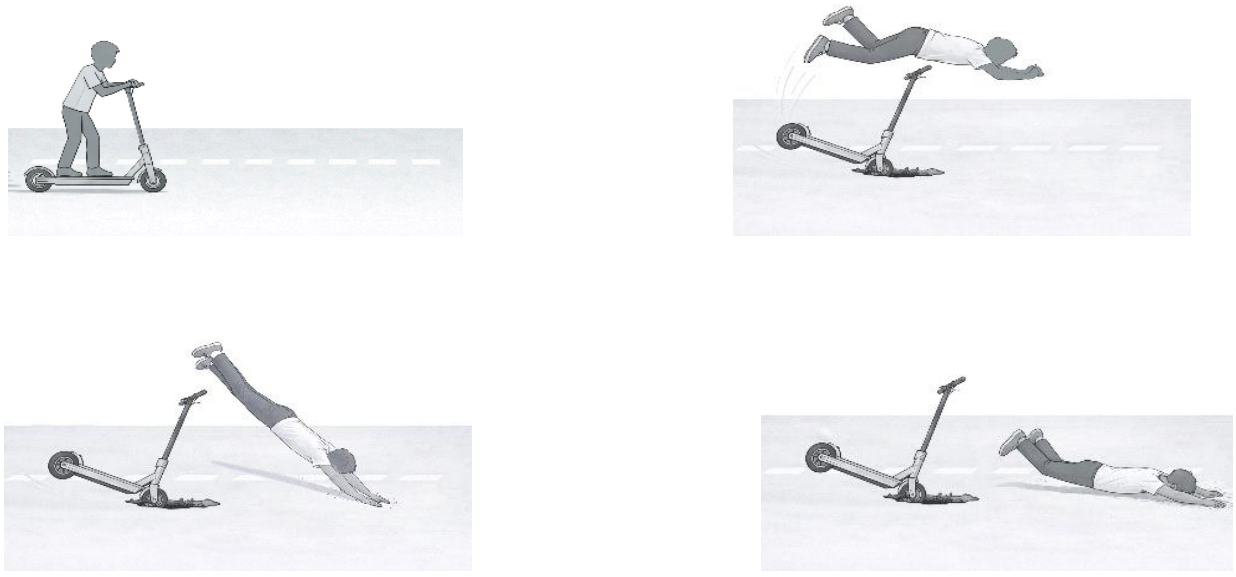
Lateral fall occurred in 14% of all cases (7 victims). The causes of the fall were skidding of the scooter on a turn (43% of cases of this mechanism), uneven road surface, a lateral impact against an obstacle, a sharp turn of the handlebars, and loss of lateral balance due to asymmetric weight distribution. The injury mechanism consists of the scooter tilting sideways and falling to the side together with the child or separately; the child falls sideways (right or left), the body follows a parabolic trajectory sideways-downward, with possible rotation of the body around its longitudinal axis during the fall; the height of the child's center of gravity fall is 0.8 to 1.4 m depending on age. The sequence of contact with the road surface occurs on one side of the body: first, the lateral surface of the thigh or knee makes contact, then the hip area or the greater trochanter of the femur, the elbow and shoulder on the same side, and the lateral surface of the head (parietal-temporal region), with possible sliding on the asphalt on the side observed in 57% of cases (Fig. 3a, b, c, d). Typical injuries include femoral neck fractures (14% of cases of this mechanism), elbow joint fractures, predominantly radial head fractures (43%), clavicle fractures (29%), traumatic brain injury in the form of a brain contusion in the parietal-temporal region (71% of cases of this mechanism), multiple linear abrasions along the lateral surface of the body from sliding on the asphalt with a characteristic direction from front-to-back or top-to-bottom, and soft tissue contusions of the thigh.



a) b) c) d)

Figure 3: a, b, c, d. Schematic illustration of the lateral fall mechanism from an electric scooter.

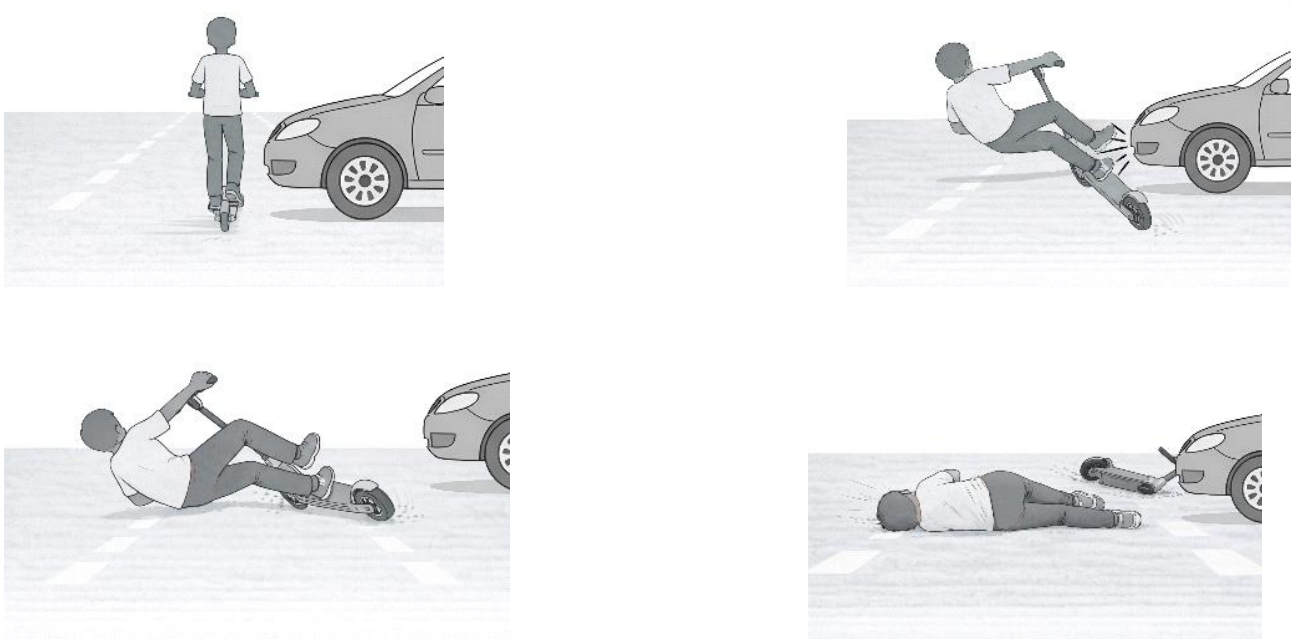
Fall due to collision with an obstacle was the second most common injury mechanism, observed in 6% of cases (3 victims). The injury mechanism unfolds as follows: the child operates the electric scooter moving forward at 15-25 km/h, an obstacle (stones, road unevenness, a curb 5-15 cm high, or a pothole) lies ahead on the road, the front wheel of the scooter hits the obstacle and suddenly stops or bounces upward, the rear part of the scooter rises due to the conservation of kinetic energy, the child continues to move forward by inertia with acceleration, detaching from the deck and flying over the handlebars, the body follows a parabolic trajectory forward-upward-downward with a trajectory height of up to 1.5-2 m, and landing occurs on the road surface behind the obstacle at a distance of 1.5-3 m from the scooter's stopping point. The contact sequence is characterized by initial contact with the outstretched hands (a pronounced protective reaction is observed in 100% of cases), followed by the head (forehead, parietal region), shoulders, and chest, with a characteristic absence of injuries to the lower limbs (Fig. 4a, b, c, d). Typical injuries include fractures of both radii (100% of cases), severe traumatic brain injuries (moderate to severe brain contusion – 67%), bilateral clavicle fractures (33%), multiple abrasions on the anterior surface of the body, and absence of injuries to the posterior body surface and lower limbs.



a) b) c) d)

Figure 4: a, b, c, d. Schematic illustration of the fall mechanism due to collision with an obstacle.

Collision of the electric scooter with a motor vehicle was observed in 18% of cases (9 victims). The injury mechanism involves the child riding the electric scooter in one direction (most often crossing the roadway or riding along it), while a vehicle moves in a perpendicular or opposite direction at 30-60 km/h; a collision occurs in which the bumper or side of the vehicle contacts the lateral side of the electric scooter at wheel or deck level, the child receives a lateral impact at the level of the lower limbs or pelvis, the child's body is thrown sideways or upward with great force, the child is launched from the scooter a distance of 3-10 m depending on the vehicle's speed, and the body's flight may be accompanied by rotation around various axes. The injury sequence includes a primary impact – contact of the bumper with the child's lower limbs or pelvis – and secondary injuries from the fall onto the road surface – landing on the side of the body (thigh, pelvis, shoulder, head) with possible rolling and multiple successive impacts by different body parts (Fig. 5a, b, c, d). Typical injuries include multiple bone fractures (mean 3.2 fractures per child), fractures of the tibia and femur on the impact side (89%), pelvic fractures (44%), severe traumatic brain injuries (severe brain contusion – 56%, epidural and subdural hematomas – 33%), internal organ injuries (liver and spleen lacerations – 22%), multiple abrasions and contusions over the entire body surface, and characteristic asymmetry of injuries with predominance on the impact side.

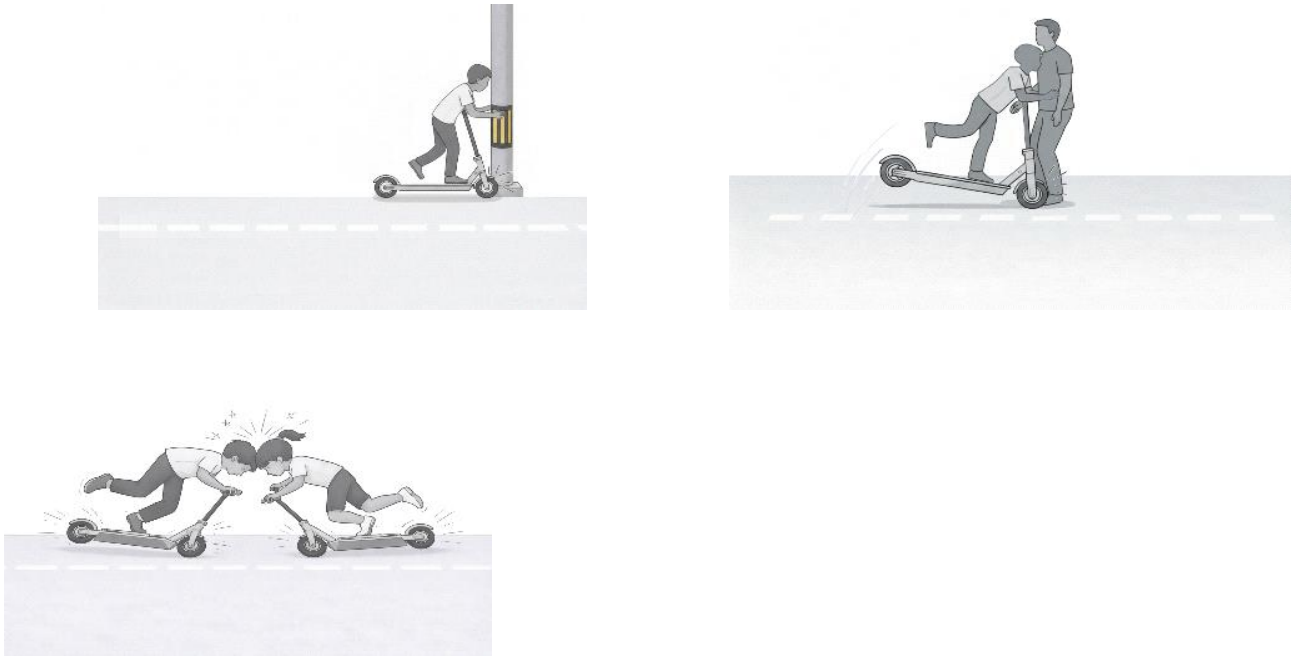


a) b) c) d)

Figure 5: a, b, c, d. Schematic illustration of the mechanism of electric scooter collision with a motor vehicle.

Collision of the electric scooter with a stationary object was observed in 4% of cases (2 victims). The injury mechanism is characterized by the child riding the electric scooter forward at a certain speed (15-25 km/h in the cases studied), with a stationary vertical object (a street lamp, tree, fence, or building wall) ahead; the front wheel and handlebars of the scooter strike the stationary object, the scooter suddenly stops, and the child continues to move forward by inertia. Two possible scenarios exist: the body tilts forward, the chest and abdomen contact the handlebars, and the head may strike the object; or the child flies over the handlebars and strikes the object with the anterior part of the body (face, forehead, chest) (Fig. 6a). Typical injuries include severe facial trauma (multiple fractures of the facial skull bones – 100%), severe traumatic brain injury (contusion of the frontal and temporal lobes – 100%), chest contusions (rib fractures – 50%), abdominal organ contusions, characteristic localization of all injuries on the anterior body surface, and absence of injuries to the limbs and posterior body surface.

Collision with a pedestrian was observed in 2% of cases (1 victim) and is a rare mechanism with characteristic injuries in the form of lower limb trauma to the pedestrian and the child falling from the scooter with corresponding consequences (Fig. 6b). Collision of two electric scooters was also observed in 2% of cases (1 victim) and is characterized by mutual falls of both children with the possibility of body-to-body collision and subsequent fall onto the road surface (Fig. 6c).



a) b) c)

Figure 6. Schematic illustration of the mechanisms of collision with: a) a stationary object, b) a pedestrian, and c) another electric scooter.

Discussion. The systematization of injury mechanisms in children during the operation of electric scooters has important practical significance for forensic medical expert activities. The identified features allow an expert to establish the circumstances of trauma with high probability even in the absence of objective witnesses to the event, which is confirmed by the studies of Buongiorno et al. (2022) [7].

The most common mechanism – a forward fall – is characterized by a specific set of injuries, among which the Colles fracture predominates (56% of cases of this mechanism). This is consistent with data from Coelho et al. (2021) [8] regarding the high incidence of distal radius fractures in falls from electric mobility devices. An important diagnostic sign is the presence of abrasions on the palmar surface of the hands, indicating an attempted protective reaction.

Backward falls are associated with the most severe traumatic brain injuries (70% of cases of this mechanism), which is explained by a direct impact of the occipital region on the road surface with no possibility of protective hand reaction. The characteristic “coup-contrecoup” mechanism leads to brain contusion in the occipital region with a contrecoup injury in the frontal region, which is of great importance for differential diagnosis with other trauma mechanisms.

Collision with a motor vehicle is characterized by the greatest injury severity and the highest rate of multiple injuries. The mean number of fractures – 3.2 per victim – significantly exceeds the figures for other mechanisms. Asymmetry of injuries with predominance on the impact side is a pathognomonic sign of this mechanism.

An important feature is the age-related dependence of injury mechanisms. Younger children (4-6 years) more often fall forward or backward due to insufficiently developed coordination abilities, while adolescents (14-18 years) more frequently are involved in collisions with motor vehicles due to higher speeds and riskier road behavior.

Biomechanical modeling of traumatic situations established a relationship between the electric scooter’s speed and the severity of injuries. At speeds exceeding 20 km/h, the risk of severe traumatic brain injury increases 4.2-fold ($p<0.001$), which justifies the legislative need to limit speeds for the pediatric age group.

The developed schematic illustrations of injury mechanisms can be used as visual materials when conducting forensic medical examinations, as well as for educational and preventive work among children and parents.

Conclusions.

1. Eight main mechanisms of child injury during the operation of electric scooters were identified: forward fall (34%), backward fall (20%), lateral fall (14%), collision with a motor vehicle (18%), fall due to collision with an obstacle (6%), collision with a stationary object, a pedestrian, or another electric scooter (2-4% each). Each mechanism is characterized by a specific set of morphological signs and injury localizations.
2. It was established that the most common mechanism is a forward fall, characterized by fractures of the distal radius (56% of cases of this mechanism), palm abrasions, and facial injuries. Backward falls are associated with the most severe traumatic brain injuries (70% of cases) with the characteristic "coup-contrecoup" mechanism.
3. It was determined that collision with a motor vehicle results in the most severe and multiple injuries (mean number of fractures 3.2 per victim) with characteristic asymmetry and predominance of injuries on the impact side, which has important differential-diagnostic significance.
4. An age-related dependence of injury mechanisms was identified: children aged 4-6 years more often fall forward or backward (80% of cases in this age group), while adolescents aged 14-18 years more frequently are involved in collisions with motor vehicles (27% of cases in this age group), which is associated with different speeds and behavioral characteristics.
5. The injury mechanisms in children during the operation of electric scooters were systematized, enabling a forensic medical expert to establish the circumstances of trauma with high probability based on the morphological signs of injuries, which is of great practical importance for expert activities and the legal qualification of events.

Author Statement.

The authors declare that they have no conflicts of interest. This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors. The authors confirm the originality of the submitted work.

Author contribution.

Yulia Kotsyubynska – data collection, performance of comparative data analysis, literature review, statistical analysis, preparation of the manuscript for publication.

Natalia Kozan – organization of the research process, verification of results, final approval of the version to be published.

Valeria Chadiuk – development of the conceptual framework of the study, preparing the draft of the article.

References / Література

1. Bekhit MNZ, Le Fevre J, Bergin CJ. Regional healthcare costs and burden of injury associated with electric scooters. Injury. 2020;51(2):271-7. doi: 10.1016/j.injury.2019.10.026
2. Hourston GJ, Ngu A, Hopkinson-Woolley J, Stöhr K. Orthopedic injuries associated with use of electric scooters in the UK: A dangerous trend? Case series and review of the literature. Traffic Inj Prev. 2021;22(3):242–45. doi:10.1080/15389588.2021.1882676
3. Cohen LL, Geller JS, Yang BW, Allegra PR, Dodds SD. Pediatric injuries related to electric scooter use: a national database review. J Pediatr Orthop B. 2022;31(2):e241–e245. doi:10.1097/BPB.0000000000000879
4. Avrahamov-Kraft E, Yulevich A, Sweed Y. Pediatric electrical bicycle road accidents. Eur J Pediatr Surg. 2022;32(1):120-6. doi: 10.1055/s-0041-1741545
5. Blomberg SNF, Rosenkrantz OCM, Lippert F, Christensen HC. Injury from electric scooters in Copenhagen: a retrospective cohort study. BMJ Open. 2019;9(12):e033988. doi: 10.1136/bmjopen-2019-033988
6. Cicchino JB, Kulie PE, McCarthy ML. Severity of e-scooter rider injuries associated with trip characteristics. J Safety Res. 2021;76:256-61. doi: 10.1016/j.jsr.2020.12.016
7. Buongiorno L, Stellacci A, Cazzato G, Caricato P, Luca BPD, Tarantino F, et al. Slow and Steady Wins the Race: A Comparative Analysis of Standing Electric Scooters' European Regulations Integrated with the Aspect of Forensic Traumatology. Sustainability. 2022;14(10):6160. doi: 10.3390/su14106160
8. Coelho A, Feito P, Corominas L, Sánchez-Soler JF, Pérez-Prieto D, Martínez-Diaz S, et al. Electric scooter-related injuries: a new epidemic in orthopedics. J Clin Med. 2021;10(15):3283. doi: 10.3390/jcm10153283

Відомості про авторів:

Коцюбинська Юлія Зіновіївна – доктор філософії, доцент, завідувач кафедри судової медицини, медичного та фармацевтичного права ІФНМУ, 76000 вул. Галицька, 2, Івано-Франківськ, Івано-Франківська область, Україна, електронна пошта: kotsyubynskayz@gmail.com, ORCID 0000-0001-6350-1791, мобільний телефон: +380966505355.

Козань Наталія Миколаївна – доктор медичних наук, професор кафедри судової медицини, медичного та фармацевтичного права ІФНМУ, 76000 вул. Галицька, 2, Івано-Франківськ, Івано-Франківська область, Україна; ORCID: 0000-0003-1017-5077, електронна пошта: nmkozan@gmail.com; моб.: +380673587224.

Чадюк Валерія Олександрівна – асистент кафедри судової медицини, медичного та фармацевтичного права, ІФНМУ, ORCID: 0000-0001-7392-7905, електронна пошта: valeriiachadiuk@ukr.net, 76018, Івано-Франківськ, вул. Галицька, 2, Україна, моб.: +380970025333.

Information about the authors:

Yulia Kotsyubynska – PhD, Associate Professor, Head of the Department of Forensic Medicine, Medical and Pharmaceutical Law IFNMU, 76000 st. Halytska, 2, Ivano-Frankivsk, Ivano-Frankivsk region, Ukraine, e-mail: kotsyubynskayz@gmail.com, ORCID 0000-0001-6350-1791, mobile phone: +380966505355.

Natalia Kozan – Doctor in Medicine, Professor Department of Forensic Medicine, Medical and Pharmaceutical Law IFNMU, 76000 st. Halytska, 2, Ivano-Frankivsk, Ivano-Frankivsk region, Ukraine; ORCID: 0000-0003-1017-5077 e-mail: nmkozan@gmail.com; mob.: +380673587224.

Valeria Chadiuk – Assistant of the Department of Forensic Medicine, Medical and Pharmaceutical Law, IFNMU, ORCID: 0000-0001-7392-7905, e-mail: valeriiachadiuk@ukr.net, 76018, Ivano-Frankivsk, Galytska st. 2, Ukraine, mob.: +380970025333.

Надійшло до редакції 10.02.2026 р.
Прорецензовано 04.03.2026 р.
Прийнято до друку 20.04.2026 р.