FAN, TA'LIM VA AMALIYOT INTEGRATSIYASI

ISSN: 2181-1776

Mardanov Jamshid Jahongirovich

PhD., Bukhara state medical institute

MODERN DIAGNOSTIC METHODS, CLASSIFICATION OF INJURIES AND PROGNOSIS FOR LIFE AND WORKING CAPACITY IN COMBINED CRANIOCEREBRAL AND SKELETAL INJURIES

Resume

Trauma diagnosis begins at the scene. When examining a patient, it is necessary to adhere to the classical scheme: anamnesis, examination, palpation, determination of range of motion, muscle forces, functions of the musculoskeletal system. It is necessary to clarify the mechanism of injury and the place of application of the acting force. This circuit works if the patient is conscious. But with a craniocerebral injury, and with a severe skeletal injury, the clinical symptoms are extremely complex. Disorders of consciousness of varying severity, shell symptoms, stem symptoms, symptoms of damage to the hemispheres and cranial nerve roots, the dynamics of these disorders - give an idea of the degree of general damage to the brain and musculoskeletal system, its severity, determine the prognosis. Often, additional examination methods (ultrasound, radiography, MRI, CT, etc.) become decisive.

Keywords: Skull bones, CT scan, Contrast agent, Injury, Glasgow Coma Scale.

Relevance: Demers G. et al. suggest using ultrasound for early diagnosis of fractures. Bone has different ultrasonic characteristics than soft tissues, and this makes it possible to detect damage to the bones of the skull and extremities at the prehospital stage. The study carried out on cadavers showed high levels of sensitivity and specificity of the proposed method.

So, for the proximal tibia, the ratio of sensitivity and specificity was 87% to 70%, and the overall positive and negative predictive value was + 85% and -74%. For the distal radius, sensitivity and specificity were 94% to 93.5%, and predictive value +93 and -91%. For the frontal bones of the skull - respectively 84% / 89%, predictive value + 85% and -88%, for the parietal and occipital bones - 95% / 88% and + 95% and -88%.

Decision time ranged from 10 to 357 seconds, with a mean time of 43-63 seconds depending on the fracture site. This method allows reliable determination of bone fractures in a very short period of time, which is useful for sorting and predicting the life of victims.

Ultrasound is considered as the tool of choice for early diagnostic studies in patients with suspected blunt trauma belly. Although the sensitivity of the method is too low, proponents argue that ultrasound can speed up the initial diagnosis of injury, reduce the number of x-rays, CT scans, and reduce costs. However, there is insufficient evidence for the diagnostic efficacy of ultrasound under extreme conditions in patients with suspected blunt abdominal trauma.

The value of computed tomography for diagnosing lesions in SSTS cannot be overestimated. According to many researchers, computed tomography (CT) is becoming a necessary diagnostic step at the beginning of trauma care due to its high diagnostic accuracy. Sierink J.C. et al., reviewing 5470 patient reports, have shown that there is a significant time advantage in favor of whole-body CT at the time of initial examination compared with plain radiography supplemented with selective CT. The use of CT is now technically feasible and is becoming a common diagnostic practice in major trauma centers. However, there is little evidence in the scientific literature that whole-body CT provides better clinical outcomes than directional radiography and CT of a specific area of the body in trauma patients. A large, clinical, international, multicentre, randomized REACT2 trial is currently underway to determine the value of direct whole-body CT for outcomes in trauma patients. Adult, non-pregnant patients with severe associated injuries are included in this study according to predefined criteria.

Excluded are those patients in whom direct CT scanning would preclude necessary cardiac resuscitation or who would require immediate surgery based on the dominant injury. If immediate whole-body CT is found to be the best way to visualize lesions in severely injured trauma patients, it will be proposed to replace conventional CT images in this particular group.

Large studies are being conducted to evaluate the impact of the introduction of CT into the examination protocol for patients with comorbid injuries on the overall diagnostic performance and, in particular, the identification of difficult-to-diagnose injuries, such as trauma to the cervical spine and pneumothorax. A special study of patients with an injury tentatively assessed as “mild” showed that in 0.8% of cases there are craniocerebral injuries detected by CT and require treatment in a specialized clinic. A number of authors believe that all patients with a diagnosis of "mild head injury" should undergo CT for clarifying diagnosis, if available. The risk of intracranial hematoma when surgery is required is in the range of 6-10:100. Patients with one of the following risk factors - coagulopathy, drug or alcohol use, who have received neurosurgical procedures, have epilepsy, or are over 60 years of age are at high risk of intracranial hematoma. According to Sampson M.A. et al. (2006) for the period 1997-2004. in the emergency department, patients with hemodynamically stable injury involving two or more body systems were examined using helical CT (examination without contrast enhancement of the head, cervical spine: craniocervical and cervicothoracic junctions; examination with intravenous and oral contrast enhancement of the thoracic, abdominal cavity and pelvis) and using standard radiographs (thorax, spine and pelvis).

Out of 296 cases of combined injuries, in 41 cases (13.8%) the result was negative. In positive cases, 127 (43%) traumatic brain injuries, 25 (8%) fractures of the cervical spine,

66 (22%) pelvic fractures, 48 (16%) fractures of the thoracic or lumbar spine, 97 cases (33%)) pneumothorax, 22 (7%) mediastinal injuries and 49 (17%) intra-abdominal injuries with 19 (6%) splenic ruptures. Some findings were unexpected, including 19 cervical spine fractures that were not diagnosed on standard lateral CT scans in the intensive care unit, and 97 cases of pneumothorax, of which 12 were bilateral, 52 were total, and 36 were not found on chest x-ray. In three patients, the CT examination could not be completed due to a sharp deterioration in the clinical condition of the patients, and all of them were immediately returned to the intensive care unit. There is no doubt that multidisciplinary teams of specialists should be involved in the diagnosis and treatment of patients with severe injuries. Establishing standards for the treatment of associated injury helps to avoid underestimating its severity. The standard should take into account the circumstances of the accident, the mechanism of injury and impairment of vital functions.

Linsenmaier U., Krotz M. et. pericardium, and the use of CT is optional and depends on clinical findings and findings from primary studies. Ruchholtz S, Waydhas C, Schroeder T. (2002) believe that it is not advisable to perform CT scans for all patients with injuries, since the radiation exposure is high and the time spent is greater than with routine radiographic studies. However, PBST is clearly an indication for whole body CT. Additional radiation exposure has also been reported by other authors.

Many authors rightly point out that after CT diagnostics in many victims, the diagnosis turns out to be more difficult than before. Smith C.M. et al. studied all cases of trauma diagnosis at Warwick University, Coventry, Denmark, over two three-month period - before the introduction of CT in the protocol of mandatory examination of patients with injuries and after. The ratio of associated injury to single injury in this study was 87/114 (76%) after CT and 44/94 (47%) without CT. In addition, no negative effects associated with CT were found. In 17 cases, CT revealed injuries for which there was no clinical suspicion. Thus, the improvement of diagnostic methods contributes to the identification of a greater number of concomitant injuries. Spiral CT allows you to save time on the diagnosis of injuries in victims, which is proved by specially conducted studies in Austria. Lesions missed on other examinations are identified. According to Rieger M. et al., there are few false positives. Albrecht T. et al. found false-positive results in 4 out of 112 examinations with damage to the soft tissues of the chest or abdomen. At the same time, conventional chest radiography reveals only 20% of chest soft tissue injuries, and ultrasound - 22% of abdominal injuries, and false positive results are also not excluded (2 per 112 examinations). In the conducted studies, CT scans diagnosed 87% of existing vertebral fractures, 5 anterior vertebral body fractures and 5 transverse fractures of the spinous processes were missed. Conventional radiography revealed 71% of existing vertebral fractures, including only 50% of unstable ones.

Some authors believe that whole-body helical CT is warranted even if there are no obvious signs of injury. So, Salim A. et al. in a prospective study showed the diagnostic efficiency of CT. CT of the head, cervical spine, chest, abdomen, and pelvis was performed in 592 specially selected patients after a serious road traffic accident (n=1000), who had no obvious damage to the chest or abdominal organs, were hemodynamically stable, and had no peritoneal symptoms, neurologic examination findings were normal, and consciousness was clear. Clinically significant head injuries were found in 3.5%, cervical spine in 5.1%, chest in 19.6% and abdominal cavity in 7.1% of CT scans. The overall treatment plan was changed after CT scanning in 18.9% of patients. Similar conclusions are made by the

German researchers Albrecht T. et al., who regularly performed spiral computed tomography of the whole body as part of the diagnosis of polytrauma. CT provides a fast and comprehensive view and detects almost all soft tissue injuries of the chest and abdomen and is superior to chest x-ray and abdominal ultrasound. All spinal injuries were also detected by CT. The CT center and the trauma department should be in close proximity, thus avoiding the loss of time for transferring the patient. However, a randomized clinical trial conducted by Saltzherr T.P. et al. in the Netherlands did not show statistically significant differences in mortality and duration of disability in polytrauma when CT was placed in a trauma center or other medical facility, although it showed a noticeable gain in time.

Attempts are being made to standardize CT methods. Fung Kon Jin P.H. et al. proposed a new setup for multiple layered tomography, which is performed in the intensive care unit simultaneously with anti-shock measures.

A variety of techniques for conducting CT scans in PMST are being studied. Thus, Nguyen D. et al. showed in a clinical study that conducting a single-stage tomographic study of the whole body in patients with polytrauma can significantly reduce the time of examination and to improve image quality compared to conventional sequential shots. A high concentration contrast agent is preferably administered in two divided doses. In the study, patients with polytrauma underwent 16-multispiral CT (16-MSCT) of the whole body according to the standard technique (n=30) or double the number of images per pass (n=60). The first group underwent non-contrast scanning of the head and cervical spine and contrast enhancement of the spiral sanitation of the chest and abdomen (140 ml of contrast, 4 ml per second, 300 mg in 1 ml of solution).

The median time for the cross-sectional study was 42.5% shorter than for the conventional study. There were no significant differences in the average contrast values in the aorta, liver, spleen, and kidneys. The image quality of the single-shot examination was better than that of the conventional mediastinal and cervical spine protocol ($p<0.05$). Single-stage examination of the whole body results in less radiation exposure than examination of individual segments. According to Ptak T, Rhea JT, Novelline RA., this load is 17% lower due to the elimination of zone overlap in several studies of individual segments. The need to take into account the total dose load in patients with severe injuries also exists.

Mandatory MSCT for patients with multiple injuries allows for more accurate and quick diagnosis and reduces the loss of time in the early stages. In addition, the bed-day and cost of treatment are reduced, and the study is safe and effective. A retrospective multicentre clinical study of the effect of whole body CT on outcomes in patients with major trauma was performed (n=4621). The authors compared survival in patients with blunt trauma who underwent whole-body CT during resuscitation with those who did not. According to the German Injury Registry, 1494 patients (32%) out of 4621 received whole body CT. The median age was 42.6 years (SD 20.7), 3364 (73%) were male, and the median injury severity index was 29.7 (13.0). Multivariate analysis showed that whole body CT is an independent predictor of survival ($p = 0.002$). An analysis of the scientific literature also confirms that early whole-body CT for trauma leads to a significant increase in survival among patients with polytrauma. Therefore, whole-body CT is recommended as a standard diagnostic tool for early resuscitation of patients with polytrauma.

Standards for assessing the severity of injury. The need for a unified standard approach to assessing the severity of injury and stages of care is long overdue. To assess the severity

of injury, the Glasgow Outcome Scale (GOS) was proposed. GOS was used to assess the effects of trauma from 6 months to 2.5 years after the incident (n=445). The findings were correlated with the Injury Severity Score (ISS). Standards for assessing the severity of injury. The need for a unified standard approach to assessing the severity of injury and stages of care is long overdue. To assess the severity of injury, the Glasgow Outcome Scale (GOS) was proposed. GOS was used to assess the effects of trauma from 6 months to 2.5 years after the incident (n=445). The findings were correlated with the Injury Severity Score (ISS).

Factors other than the type and severity of injury that influenced return to work were higher levels of education, white-collar employment, higher income levels, and the presence of social support from family or friends. To measure the quality of care, an indicator (QI, quality indicator) is proposed that satisfies a number of criteria: its relationship with the outcome; measuring what is considered current generally accepted practice; precise definition of target populations; using appropriate risk management strategies; a sufficient number of people who meet the selection criteria to ensure system-wide quality. The use of QI proposed by the American College of Trauma Surgeons (ACSCOT) and research on its use to measure the quality of trauma care has shown some benefits, although it has had its detractors.

This shows the difficulty of creating ideal outcomes in trauma care and suggests that work in this direction will yield results in the future. Other authors also point out the difficulties of creating uniform standards. This problem is still waiting for a solution. A meta-analysis showed a 15% reduction in mortality with a standard of care for trauma. Evaluation of the effectiveness of any standard should proceed from obtaining the optimal result for the victim.

To determine the severity of damage in the main clinical and functional systems (cranial, skeletal, thoracic, abdominal), a modified S.A.T.:

N - Cranium:

N-1 Concussion. Mild injury. GCS 13-15 points

N-2 Moderate brain contusion. Minor subcutaneous hemorrhages. GCS 8-12 points

N-3 Open fractures of the skull. Intracranial traumatic formations with signs of brain compression. GCS 3-7 points

S - skeleton:

S-1 Simple fracture of the femur or equivalent

S-2 Complicated fracture of the femur or equivalent

S-3 More than two fractures of the femur, fracture of the pelvis on both sides

A - abdomen:

A-1 Small liver ruptures, all forms of spleen rupture

A-1 Large liver ruptures and spleen ruptures or equivalent

A-3 Widespread liver ruptures and spleen ruptures and/or intestinal perforation with contamination of the abdomen

T - thorax:

T-1 Unilateral fracture of ribs, hemothorax, pneumothorax, no pulmonary contusion

T-2 Bilateral fracture of ribs or contusion of the heart or contusion of the lung

T-3 Need for more than two urgent operations Turapov A.A., Rabinovich S.S. et al., 2008):

I - leading severe TBI and mild skeletal injury;

II - leading severe skeletal injury and mild TBI; group III — severe TBI and severe skeletal injury;

Group IV - mild TBI and mild skeletal injury

In clinical practice, this is represented as follows (Ovechkin L.A., Gushchenkov A.G., Ananiev N.I., 2011):

- severe TBI and severe extracranial injuries
- 27%, - severe TBI and non-severe extracranial injuries - 27%,
- non-severe TBI and severe extracranial injuries - 33%,
- non-severe TBI and non-severe extracranial injuries - 13%.

As you can see, alcohol burdens are not taken into account.

The abbreviated injury scale AIS (Abbreviated Injury Scale) and its derived injury severity score ISS (Injury Severity Score) are often used for forensic assessment of the severity of SCHTS. The AIS scale provides coding for six anatomical regions and six degrees of damage severity. The ISS result is the sum works and ranges from 0 (no damage) to 75 (damage incompatible with life).

To assess the severity of damage in traumatic brain injury, many researchers suggest using the Glasgow Coma Scale (GCS),.

The main modern concept of rendering assistance: the fastest transportation of the injured by medical transport teams to the structural unit for the provision of specialized medical care for polytrauma, where all types of diagnostics, intensive care, surgical treatment and special rehabilitation are performed. The importance of adequate and timely analgesia cannot be underestimated, especially in patients with polytrauma.

The basic management of patients with brain injuries should include the following procedures in the emergency department:

1. Accurate record in the medical history of the circumstances of the injury and risk factors for severe traumatic brain injury.
2. Glasgow Coma Scale (GCS), pupillary reflex, blood pressure.
3. Diagnosis using CT.
4. Rapid surgical decompression if indicated. Doig G.S. et al. suggest initiating early enteral nutrition and note that this approach allows for some reduction in mortality.

The system of providing specialized assistance in case of road accidents in the Leningrad Region is represented by three levels of trauma centers and specialized rehabilitation departments. They were created to improve the quality and accessibility of medical care; to centralize expensive equipment and specialists to provide specialized and high-tech care on the basis of existing hospitals.

The tasks of the centers of levels 1 and 2 include the delivery of victims with severe injuries during the "golden hour", computed tomography, ultrasound, and endoscopic examination. There are anti-shock operating rooms, where the victims come immediately from the ambulances, equipment for resuscitation and intensive care, doctors-specialists in the treatment of severe concomitant trauma. Level 3 centers have been created on federal highways. The study of the experience of providing assistance to victims with SCTS in medical institutions (MFIs) of St. Petersburg and the Komi Republic (n=1628 cases of pre-hospital care for victims of road accidents, 18-50 years old, 77% of men) revealed the following patterns. More than 60% of the victims at the prehospital stage were provided with medical care by ambulance teams.

The average arrival time for teams is 10 minutes, and the delivery time to health facilities is 54 minutes, which in 83% of cases fits into the "golden hour". Diagnosis of the dominant area of damage in SCMT at the prehospital stage presented certain difficulties, which in 16% led to non-core hospitalization. Most often, errors were made in the diagnosis of TBI (20%), PSCI (35%), cranio-facial injuries (41%) and traumatic shock (32%). Defects in therapeutic measures were as follows: anesthesia was not performed (14%) or it was insufficient (29%); did not carry out infusion therapy (12%) or did not carry it out in full (15%); inadequate breathing correction (16%) or its absence (25%); shortcomings of transport immobilization (19%) or its absence (12%).

It is recommended to include at the prehospital stage a number of organizational measures to improve medical care: increase the number of resuscitation and surgical teams, develop and implement alternative methods of delivering victims (water and air transport), and use a combination of different modes of transportation.

References.

1. Vertebroplasty in the surgical treatment of spinal tumors - evaluation of treatment results. Scientific and practical journal "Doctor-graduate student" No. 4 (53). 2012.S. 9-13. Yuldashev R.M., Mardanov J.J.
2. Our experience in the treatment of patients with extradural tumors of the spinal cord. Journal of Theoretical and Clinical Medicine. 2013. - No. 3.- P.100-102. Yuldashev R.M., Mardanov J.J.
3. Pathogenesis of metastasis in the spine. Scientific and Practical Journal of Neurology 2014.-№ 4.- P. 37-39. Kariev G.M., Mardanov J.J., Norov A.U.
4. Quality of life in patients with extradural tumors of the spinal cord. Uzbekiston surgeryasi journals 2016.-№4-C-25-27. Mardanov J.J., Zikriyaev N.N., Rakhmatov K.R., Razhabov M.M.
5. Surgical treatment of spinal hemangiomas. Russian neurosurgical journal named after professor A.L. Polenov. 2014 volume-№4. –S.-343-345. Mardanov J.J.
6. The result of surgical treatment of pathlogical spinal fracture during extradural tumor of spinal cord. European Sciences Review 2014.-№3-4 – C.-21-24. Mardanov J.J.
7. Posterior - lateral approach for surgical treatment of extradural tumors of the spinal cord. Questions of science and education. 2021. - No. 22 S. - 147. Mardanov J.J. HTTPS://SCIENTIFICPUBLICATION.RU

8. Surgical treatment of extradural tumors of the spinal cord. Questions of science and education. 2021. - No. 26 S. - 157. Mardanov J.J. HTTPS://SCIENTIFICPUBLICATION.RU
9. Posterior-lateral approach in surgical treatment of patients with pathological vertebral fractures with tumors. Usubiy tavsiyanoma. Uzbekistan. Tashkent. - 2016.-- 19 p. Yuldashev R.M., Mardanov J.J.
10. Surgical tactics for extradural neoplasms of the thoracic spine. Actual problems of neurosurgery: Materials of a scientific and practical seminar. Tashkent-Andijan. 2011, p. 182-183 Yuldashev R.M., Mardanov J.J.
11. Prognostic factors and treatment recommendations for patients with metastatic neoplasms of the spine. Usubiy tavsiyanoma Uzbekistan. Tashkent. - 2011.-- 20 p. Yuldashev R.M., Khalikov Sh.A., Dzhumanov K.N., MardanovJ.J.
12. Surgical treatment of pain syndromes of the spine by the method of percutaneous vertebroplasty. Usubiy tavsiyanoma. Uzbekistan. Tashkent. - 2012.-- 16 p. Yuldashev R.M., Mardanov J.J., Norov A.U.