

Importance of Injury Signs and Indices in Prehospital Triage of Nonuniformly Irradiated Patients

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In radiation accidents, people usually are exposed to general, nonuniform irradiation. In the Russian State Register of Radiation Accidents for 1950–1992, 119 cases of acute radiation sickness of uniform irradiation, 193 cases of acute radiation sickness from nonuniform irradiation, and 159 cases of severe, mainly local radiation injuries were registered. Clinics of injury in nonuniform irradiation may differ considerably from classical forms of acute radiation sickness seen with uniform irradiation. It impedes prognosis of injury severity, and thus, may influence the character and volume of medical-evacuation measures. In this connection, in the prehospital triage of the injured, it is necessary to take into account the prognostic importance of the signs of an injury from nonuniform exposure.

Study of absorbed dose distribution in a human body in typical situations showed that more often, it would be different variants of nonuniform irradiation with 2–5 times differences of dose. Depending on geometry of the irradiation, clinical signs of such injuries will vary considerably. The most important characteristic are (1) injuries with mostly head irradiation, when clinics of radiation sickness will be determined by oropharyngeal and in very high doses by cerebral syndromes; and (2) injuries with mostly abdomen irradiation with signs of modified intestinal syndrome. Some intermediate forms are possible with relatively small levels of nonuniform irradiation (dose fall off up to 3). In such cases, the signs of the corresponding syndromes will be expressed in vague form.

The triage of the injured in nonuniform irradiation must be carried out in accordance with the same process as for the injured in uniform irradiation. However, while estimating prognosis and establishing the evacuation priority in nonuniform irradiation, the relatively more favourable process of these forms of radiation pathologies must be taken into consideration. Signs of hemogenesis depression may be expressed in less degree, and may not correspond to the whole degree of severity of disease than should be expected from general ideas. During the primary reaction, the comparison of the disease symptoms with the dosimeter data and data on the body position during irradiation may be used to estimate the dose and its distribution. It also is necessary to compare the character and degree of local and general signs of an injury. Thus, distinct oropharyngeal syndrome in presence of moderate dyspeptic disorders indicates to the sharply nonuniform irradiation with prevailing head irradiation. In moderate nonuniform irradiation ("intermediate forms"), clinical symptoms and the main laws of the disease process are close to the classical form of acute radiation sickness, caused by uniform irradiation. However, even in this case, correlation between expressed "classical" signs of acute radiation sickness (primary reaction, radiation bone marrow hypoplasia, etc.) and local signs reflect the morphological and functional changes of other critical bodies.

Key words: clinical signs; irradiation, non-uniform; irradiation, uniform; radiation sickness; syndromes; triage

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Volunteers: An Essential Component

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2001 is the International Year of the Volunteer. In any modern emergency response system, there always will be an incident in which the supply of emergency services and the demand do not match. No country can afford to have every emergency service on standby and reach every citizen within three minutes. Self-help and volunteers are essential in all societies, not just in the frequently televised disasters such as earthquakes or floods.

Professor E. L. Quarantelli of Chicago is an accepted master of recording human behaviour in disasters, and his 1960s model is readily extrapolated to more mundane emergency situations.¹ In Australia, volunteers are an integral part of responses: they are used both in ordinary emergencies and disasters. The medical and ambulance emergency services routinely use volunteers from community emergency response teams (CERT), Red Cross, St. John, Surf Life Saving, Hatzolah, etc. through a coordinated central dispatch system.

The Australian prototype for volunteering is the rural fire services, each one is built around a local community, with state and regional levels of salaried staff providing infrastructure services, education, certification, or higher level coordination in very major incidents. In larger towns (population $\geq 25,000$), there are full-time salaried, ambulance paramedics, but smaller townships may rely on paid casual or unpaid volunteers who have a similar training, but usually, lower level protocols. Using the Quarantelli template, when an incident occurs, firstly there is self-help by the victims or bystanders. Next, the professional services are alerted, and in rural and remote areas, they may use trained volunteers from ambulance, first aid, nursing, or medical resources as first or second line response. In a major event, the on-scene supervisor coordinates the volunteers to integrate them in tasks that are both safe and within their range of skill and fitness. Where the involvement may be prolonged, the sequence always must involve some form of supervision during every phase: assessing, briefing, equipping, deploying, communicating, reporting, debriefing, and stand down. Volunteers should not be left alone to 'muddle on'. Some volunteers may be exhausted or simply grateful to be relieved of their task and return to their families, others help for longer, then leave the scene to continue their normal routines.

By supporting volunteers, a skilled supervisor assists in rehabilitation of the affected individual and the whole community. Professionals arriving at the scene must recognise the part the volunteers have played prior to the arrival of the "authorities". Simple courtesies such as taking a handover, exactly as professionals do when taking over from a

colleague, and if appropriate, keeping them involved during the remainder of the incident. At the conclusion, a debriefing to cover functional aspects of their role may allow hitherto unrevealed facts to become shared knowledge. In disaster situations, these debriefings may need to continue over several weeks as different aspects of the event and its consequences become the focus of mental and physical needs. Finally, a thank you letter returns its own goodwill many times over, and, in a community affected by a disaster, also assists the individual to return to their normal psychological state and a normal life.

Reference

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Key words: disaster; infrastructure; management; Quarantelli; responses; salary; self-help; supervision; volunteers

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Chemical Accidents in Urban Areas

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Industry commonly makes more than 70,000 different chemicals. Chemical accidents represent the loss of control of a toxic product. The consequences affect people, animals, and the environment; they often are serious, immediate or delayed, and sometimes unknown. A chemical accident in an urban environment is characterised by: (1) its suddenness of onset and the initial localisation (industrial sites, public highways, railroad lines and sometimes planes or pipelines); (2) the number of poisonings; (3) the uncertainty as to the nature and toxicity of the products; (4) the important influence of the weather, the geography and the urbanisation features; (5) the number of casualties; (6) the organised influx (by rescue teams) or uncoordinated influx (spontaneous arrivals) of casualties; (7) the repetitive injuries (inhalations, burns, blasts, ocular lesions, cutaneous cuts or irritations, etc.); (8) a poor and often insufficient sanitary organisation (lack of medical knowledge and culture concerning the chemical accident even in developed countries); (9) logistical and therapeutic constraints; (10) risks for the rescue teams; and (11) immediate emotional media repercussions. The alert usually is precocious, but often indistinct. The first medical team on the scene, headed by a responsible physician, settles itself in a place without risk. The first damage assessment allows the assessment of the needs and of the emergency actions needed to be put into place by the relevant authorities. The collaboration should be limited among the rescuers (fire brigade, emergency medical services, poison centre, police, authorities, company, experts, medical psychological emergency unit), each having a part, but all working together. The usual missions of the Emergency Medical Service simultaneously are adapted to the human and logistical constraints connected with the exceptional event. Taking charge of the victims on-site (selection, first medical aid, evacuation) is based on

the principles of emergency disasters, but a third level (potential emergency or victim who can present secondarily an acute and serious level of decompensation) is in addition to the two conventional emergency levels (absolute and relative levels). Equipped professionals must decontaminate each casualty before medical aid can be administered. Nevertheless, rescue teams should be protected to allow them to treat on-site. Everybody (patients of resuscitation, the injured, involved witnesses, rescuers) should be treated. The preparation of emergency rescue operations relies on the anticipation and evaluation of the potential industrial accidents in a region. Procedures taking account of risks and means (local chemical risks and local hospital structures) must be written and regularly updated. Real life exercises should be carried out. Finally, the information of the rescuers, patients, families, population and media should be clear, coherent, global, ethical, and not dramatised.

Key words: accidents; characteristics; chemicals; collaboration; control; exercises; information; levels; media; risks; toxicity; urban

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Clinical Analysis of 1,076 Cases of Abdominal Injury Bai Tie

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Objectives: To improve the level of early diagnosis and operating treatment of abdominal, multiple organ injuries.

Methods: A total of 1,076 patients with abdominal, multiple organ injuries were treated in our unit.

Results: The main causes of injuries were road traffic accidents, falls, and assaults. All Injury Severity Scores (ISS) of the patients were greater than 16; the highest ISS and the mean values for ISS were 60 and 29.5 respectively. Closed wounds were present in 893 cases, and open wounds in 183 cases. In this study, 969 cases underwent laparotomy. The main intraabdominal organ injuries included spleen, liver, kidney, stomach bowel, colon and rectum. A total of 990 cases (92%) survived, 96 cases (8.9%) had no detectable blood pressure on admission and were brought back to life, 17 cases (1.6%) were reoperated due to missed injuries or inadequate management at the initial operation. The mortality rate was 8.0% (86 patients) and most of the deaths were due to hemorrhagic shock.

Conclusions: Under urgent conditions, consuming diagnostic procedures are not allowed when a patient's hemodynamics is stable. Modern diagnostic techniques should be used to avoid polytrauma. Laparotomy should be performed actively, for prolonged contamination due to gastrointestinal rupture is more harmful than is a negative exploration. An operative principle is that saving life is primary and remaining organ function is secondary.

Key words: abdominal injury; demography; diagnosis; laparotomy; outcome; results; shock; surgery; therapy; trauma

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