

LESION TYPES AND THEIR PRODUCTION MECHANISMS IN VICTIMS OF WORKPLACE ACCIDENTS

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Abstract: The aim of the present research is to reveal the type of lesions and their mechanism, as well as their localization in the case of surviving victims and of deceased victims in workplace accidents. As a phenomenon, occupational accidents are the subject of concentrated and profound research of several scientific disciplines. Both, work accidents and death at the workplace have an enormous social impact, and also a great effect on the health status of each individual. The work presents work accidents in a longitudinal retrospective study performed on 917 cases of surviving victims and other 89 not surviving victims. The cases were identified in the registers of the Service of Forensic Medicine and in the TLI (Territorial Labor Inspectorate) Sibiu archives during the period 2005-2013. Bone fracture was the most frequent lesion (40.79 %) in surviving victims of work accidents. The lesions were mostly located at the level of upper limbs (31.30%), lower limbs (24.65%), head (18.32%) and multiple associated lesions (multiple trauma)(11.34%)

INTRODUCTION

As a phenomenon, occupational accidents are the subject of concentrated and profound research of several scientific disciplines.

Broadly, the notion of workplace accident refers to the violent injury of human body, including acute occupational poisoning, which occur during the work process and lead to temporary work disability of at least three calendar days, (1) invalidity (INV) or death (D) (Art. 5 (g) of Law 319/2006). However, in extremely rare occasions, not all of these events qualify as accidents, as some of them are suicides or crimes. The distinction of these situations is not always easy, but it can be achieved by completing the expertise and the research in situ; the collected data are corroborated with the observed lesions in victims and with the physical environment in which the event took place.(2)

Both work accidents and death at the workplace have an enormous social impact, and also a great effect on the health status of each individual. In the current social and political background of Romania's integration in the European Union, the strategic objectives of our country and government will have to include the development and practical application of safety management approaches on employment and labor health. These goals can, over time, reduce the number of victims and severity of workplace accidents in Romania, a fact mentioned in the both national and international literature.(3,4,5,6,7,8)

Promoting a national strategy in order to reduce work accidents, number of casualties (dead and wounded) and sudden death at workplace,(9,10,11,12,13) one must start from the premise that prevention and control policy regarding the ever increasing phenomenon of occupational accidents is less expensive and much more efficient than the costs generated by their consequences, especially for a country with economic difficulties, such as Romania. Moreover, considering the EU target on labor safety, namely reducing the number of labor victims to half by 2020, an assimilable and justifiable target for the following years, Romania has the responsibility to roughly

structure the strategic policy in the field of labor safety, occupational health, accident control and employees education by establishing sectorial objectives in order to reach anticipated results.(14,15,16,17,18)

PURPOSE

The aim of the present research is to reveal the type of lesions and their mechanism, as well as their localization in the case of surviving victims and of deceased victims in workplace accidents.

MATERIALS AND METHODS

The study material was represented by 917 cases of surviving victims and 89 cases of victims deceased in workplace accidents, identified in the archives of the Service of Forensic Medicine and Territorial Labor Inspectorate (TLI) Sibiu, during the period 2005-2013. The study is a retrospective longitudinal one, from the forensic documents.

RESULTS

The results obtained during the period 2005-2013 regarding the type and the mechanisms production of victims in workplace accidents are presented in the tables below. In the first table is presented the lesion types in surviving victims in this type of accidents. The second table shows the lesion location in workplace accidents and the third table shows production mechanism of this type of lesions.

Table no. 1. Lesion types in surviving victims of workplace accidents

No	Type of lesion	No of cases	Percentage (%)
1	Unknown / unspecified lesions	14	1.53
2	Superficial lesions	178	19.41
3	Bone fractures	374	40.79
4	Sprains, luxation and	25	2.73

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	lesions of muscle and tendons		
5	Amputations	69	7.52
6	Concussions and internal lesions	110	12
7	Burns and frostbites	23	2.51
8	Poisonings and infections	2	0.22
9	Drowning and asphyxiation	5	0.55
10	Effects of sound, vibration and pressure	1	0.11
11	Effects of extreme temperature, light and radiations	0	0
12	Shocks	2	0.22
13	Multiple lesion	91	9.92
14	Other specified lesions, not included above	23	2.51
15	Total	917	100

The predominant type of lesion in surviving victims of work accidents was the bone fracture – with 374 cases – followed by superficial lesions (178 cases), concussions and internal lesions (110 cases), as it can be observed in the above table (table no. 1).

Table no. 2. Lesion locations in surviving victims of workplace accidents

No	Lesion location	No of cases	Percentage (%)
1	Unspecified	10	1.09
2	Head	168	18.32
3	Neck, including back and upper region of the spinal cord	8	0.87
4	Back, including back and spine in the lower region	29	3.16
5	Body and organs	82	8.94
6	Upper limbs	287	31.30
7	Inferior limbs	226	24.65
8	Entire body and multiple unspecified parts	104	11.34
9	Other injured body parts, not included above	3	0.33
10	Total	917	100

The results show that consecutive lesions caused by work accidents are produced by simple lesion types, but their association is an aggravating factor, with serious medical and social repercussions.

Most lesions in surviving victims of workplace accidents were located at the level of limbs and head (287 cases), lower extremities (226 cases), the entire body or multiple parts (104 cases) of the 917 cases referred to in the study.

Table no. 3. The production mechanism of lesions in surviving victims of work accidents

No	The production mechanism of lesions	No of cases	Percentage (%)
1	Electrical problems, explosions, fire	21	2.29
2	Flooding, overturning, vapor or gas leaking	13	1.42
3	Cracking, slipping, crashing, collapsing	105	11.45

4	Loss of control (total or partial) of vehicle, means of transport and work equipment	303	33.04
5	Slipping – stumbling and falling of a person	181	19.74
6	External injuries produced by body movements	83	9.05
7	Internal injuries produced by body movements	40	4.36
8	Shocks, freezing, violence, aggression, threatening	44	4.80
9	Other breaches not included in the above	67	7.31
10	No information	60	6.54
11	Total	917	100

One third of the work accidents with surviving victims were produced due to mishandling or loss of control on equipment. An important share (19.74%) is represented by accidents caused by slipping or by stumbling and falling of a person (table no. 3).

DISCUSSIONS

This research represents a link of the development of purpose and allows extending the areas of knowledge in other areas of medicine. Several studies in the literature support the objectives achieved by me in this article and in future studies can be deepened and other research in terms of lesion types and their production mechanisms in victims of workplace accidents.

CONCLUSIONS

- Bone fracture was the most frequent lesion (40.79 %) in surviving victims of work accidents.
- The lesions were mostly located at the level of upper limbs (31.30%), lower limbs (24.65%), head (18.32%) and multiple associated lesions (multiple trauma)(11.34%)
- About 20% of the surviving victims of workplace accidents were engaged in activities of production, manufacture, processing, storage; also, victims who conducted sports activities, arts and movement are represented by the same share of 20%. The 14% share of persons, who suffered injuries following intellectual activities, is most surprising.
- Most injuries suffered by the individuals who died in work accidents were caused by injuries to internal organs and multiple traumas.
- The most frequent localization of death causing lesions was at the level of the head, followed by lesions with multiple localizations and lesions at the level of the body.
- Almost a third of the deaths caused by workplace accidents occurred due to incorrect handling or loss of control of equipment. An important share of 22% is represented by accidents caused by cracking, slipping, crashing or collapsing of objects with high kinetic velocity on victims.

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