Fatal Work Accidents In Forensic Autopsies Over A 5-Year Period

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***Abstract*— Fatal work accidents in Senegal remain a worrying subject for families and the social security fund in the form of annuity. The average age of death victims is 40 years. Concerning the place of death of the victims, 100% were in the workplace. The sector of activity most affected is the construction sector, i.e. 60% for 37 cases, then transport 21%, i.e. 13 cases. Falls from height alone are responsible for 70% of causes of death from physical accidents, i.e. 26 falls. The study of lesions at autopsy shows that the responsible polytraumas are, in order of frequency, cervical spine trauma with 50% or 31 cases. This is followed by brain trauma (skull fracture, vascular tears, engagement) with 36% or 22 cases. The main risks causing serious and fatal work accidents in our study are the risk of falling from height, the transport risk linked to the use of machines. This study shows the importance of coordinated action at national level, information concerning fatal work accidents, but also for the implementation of prevention measures adapted to the buildings and public works sectors.**

Keywords—autopsies, workplace accidents, workers, compensation.

Introduction

According to the Social Security Code, “an accident at work (AT), whatever the cause, is considered to be an accident occurring as a result of or in the course of work, to any person employed or working at any title or in any place whatsoever, for one or more employers or business managers”. The same goes for fatal workplace accidents. The fatal work accident is a fortuitous circumstance which leads to the death of the employee, it is an unforeseen event which occurs suddenly at a specific place and at a specific time. This includes road accidents (round trip between the place of work, catering and home or place of residence). In the event of a fatal accident, the presumption of imputability applies in principle according to the social security code. Thus, a medicolegal autopsy is necessary and requested by the social security fund for the search for toxic substances in order to verify whether or not the death is attributable to work for subsequent compensation of the victims if work is responsible for the death. According to the International Labor Organization (ILO), each year, approximately 300 million work accidents (WCA) occur across the world, of which 2.3 million are fatal [1]. In France, according to health insurance statistics (year 2017), of the 632,918 ATs recorded, 530 were fatal [2]. In Senegal, statistics in terms of work accidents (AT) in a professional capacity are around 63,000 victims per year. [3]. The objective of this study is to determine the epidemiological aspects, circumstances and causes of fatal work accidents in Senegal.

Methodology

Our study was carried out in the following hospital structures: the Aristide Le Dantec Public Health Establishment (EPS) (ALD) in Dakar, the Idrissa Pouye General Hospital in Grand Yoff and in the Public Hospital establishments in Ziguinchor, Kédougou…. This is a retrospective study based on data that will be collected in court requisitions, autopsy reports and in the registers of the structures concerned by this study ranging from January 2017 to December 2021. It included all cases of violent deaths following an industrial accident having benefited from a medico-legal autopsy following a judicial requisition. We excluded from this study other cases of natural deaths, undetermined deaths. The collection of elements will be carried out for each autopsy, on the basis of a file including epidemiological data and medico-legal aspects: epidemiological data (age, sex, place of death) and medico-legal data. -legal (the circumstances of death or manner of death, the cause of death or type of death) Data analysis was done using Microsoft Excel 2007 software. The quantitative variables were described by their average, maximum and minimum while the qualitative variables by their number and their percentage

Results

The study includes 61 fatal cases from 2017 to 2021 out of a population of 2096 cases or 3%, and reveals a male predominance which represents 100% of the cases studied. The most represented age group is that between 46-56 years old. The average age of death victims is 40 years. Concerning the place of death of the victims, 100% were in the workplace. The sector of activity most affected is the construction sector, i.e. 60% for 37 cases, then transport 21%, i.e. 13 cases. Falls from height alone are responsible for 70% of causes of death from physical accidents, i.e. 26 falls. The study of lesions at autopsy shows that the responsible polytraumas are, in order of frequency, cervical spine trauma with 50% or 31 cases. This is

followed by brain trauma (skull fracture, vascular tears, engagement) with 36% or 22 cases.

Discussion

This retrospective study, carried out over 5 years based on judicial autopsy reports, allows a different or more precise approach to the circumstances of death at work. Of all the victims, we recorded a rate of 3%, contrary to the literature where the mortality rate is very high[4]. As in other studies, we find a majority of men affected by deaths in the workplace. The results are identical to the MAEDA study [5], which also looked at fatal physical accidents. However, the COHEN study found results lower than 92.0% [6]. The overall average age of death is 40 years, less than that in the study by COHEN et al in 2006 (42 years)[6]. On the other hand, this result is similar to that reported by the studies carried out by MEROUEN and ELAMRI [4,7]. Which means that fatal ATs would occur in the lives of young adult workers. The increased vulnerability of this age group to fatal accidents is due to the fact that this age group is the most mobile and dynamic among all other age groups for reasons of training, employment and other responsibilities economic. This young population generally has two-wheeled vehicles. Their reckless driving, irresponsible behavior and non-compliance with safety rules predispose them to fatal accidents. Construction workers are the professional category most affected by deaths [8,9]. In this study, they represented 60% of cases. Other studies find similar results [6,8]. This is consistent with data from the International Labor Office (ILO), which considers that fatal work accidents are the prerogative of workers in the building and public works (BTP) sector [10]. The sector most affected in this study by deaths in the workplace is the construction sector, followed by the transport sector. These results can be explained by the evolution of the labor market in the construction sector in our country, and an aging vehicle fleet Concerning the causes of death, our study revealed that the first cause was trauma following a fall of height. These findings were also found in the two Moroccan and Tunisian studies [4,7]. Indeed, the most frequent accident mechanism was a fall from height with the consequences of multiple trauma followed by head trauma [4,7]. The TIESMAN study which focused on head injuries at work suggested an increased risk of fatal work accidents due to head injuries for men. , but above all suggested a significant increase in the risk of fatal AT from falls and head trauma (TBI) from the age of 65 [11].
Furthermore, the COLANTONIO study showed that falls were the leading cause of death from head trauma in the construction sector [12]. The TRICCO study, which also focused on head injuries, discovered that falls were more responsible for deaths from head injuries and first concerned the manufacturing sectors, then agriculture and finally construction, which is rather different. results of ours [13]. According to statistics from the National Institute for Research and Safety (INRS), vehicle accidents, followed by falls and moving mass accidents, are the most frequently reported causes of death. But in more than 47% of cases, the causes of death are classified as “other” and are therefore undetermined[14]. In the study, polytrauma and head trauma are the most frequent in isolation or in combination. However, the method of collecting information in the files does not make it possible to say whether the victims wore personal protective equipment (PPE), and whether the safety rules on the construction sites were respected or not. Furthermore, as workers are the socio-professional category most affected by these accidents, in addition to prevention through occupational safety and health, local prevention involving team leaders and managers in the field is necessary. Prevention which must be regular or even iterative, not excluding verification of the activities of each employee. In order to optimize its effectiveness, it must of course be participatory and take into account the comments made by the workers themselves who very often are capable of identifying dangerous activities by themselves, but do not have always have the means to deal with it without putting yourself in danger. In addition, the difficulty lies in the search for profitability and meeting deadlines under penalty of financial sanctions, which forces employers and employees to sometimes work in a hurry and to increase overtime, thus endangering the application of basic safety instructions. When the death is recognized as being due to work, the heirs will be able to receive the benefits offered by the social security fund (death capital, annuity) as part of the compensation. However, precise knowledge of the cause of death can also allow the employer and the social security fund to put an end to this presumption of imputability by proving that working conditions did not play a role in the occurrence of death. This is why it is important to carry out an early forensic autopsy to determine the circumstances and causes of death.

Conclusion

Fatal work accidents in Senegal remain a worrying subject for families and the social security fund in the form of annuity. When the death occurs at the workplace and during working hours, it is presumed to be a work accident. It is therefore up to the employer or social security to demonstrate the contrary. The main risks causing serious and fatal work accidents in our study are the risk of falling from height and the risk of transport linked to the use of machines. This study shows the importance of coordinated action at the national level, information concerning fatal workplace accidents, but also for the implementation of prevention measures adapted to the buildings and public works sectors.

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