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Is the workplace a site of cardiac arrest like any other?

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Although the installation of automated external defibrillators (AED) in public places is still the subject of controversy (1), only very limited data are available on the management of out-of-hospital cardiac arrest (OHCA) in the workplace (2).

The objective of this study was to identify the frequency of OHCA in the workplace in a Paris register of all OHCA. The characteristics of the chain of survival of workplace OHCA was compared to that of other sites of OHCA.

The 2004 data of the OHCA prospective register managed by the Paris Fire Brigade (including all OHCA managed by Firemen in Paris and the inner suburbs) were analyzed by distinguishing OHCA in the workplace from OHCA in other sites. The criterion of survival was restoration of circulation allowing hospital admission determined by the emergency physician of the prehospital care unit. Age, gender and certain elements characterizing the chain of survival were prospectively collected for univariate and multivariate comparisons according to the site of OHCA.

In 2004, 2,717 OHCA were managed in Paris and the inner suburbs, but data of location were missing for 416 cases (15.3%). Of the 2,301 OHCA studied, 61 (2.7%) occurred in the workplace. Restoration of circulation allowing hospital admission was observed in 19/61 (31.1%) of these cases by the emergency physician of the prehospital care unit, which was significantly higher than for other sites of OHCA ($n = 438/2,240, 20.0\%$, $OR_{\text{crude}}=1.9[1.1-3.2]$). Age and certain parameters of the chain of survival differed significantly in the workplace than outside (Table 1). When these parameters were taken into account the link between workplace and restoration of circulation was no longer observed ($OR_{\text{adjusted}}=1.0[0.6-1.8]$).

OHCA in the workplace appears to be rare (<3%), but is associated with a better immediate prognosis than OHCA in other places. This is probably related to a more effective chain of survival and a healthy worker effect.

Although this study presents limitations due to missing data (incomplete data, low rate of OHCA managed by volunteer first-aid workers not included) and unavailable variables (time to alert or cardiac massage, long-term survival data), these results are coherent with the rare studies specifically devoted to this subject (2-5) with a similar proportion of OHCA occurred in the workplace (1 to 6% of the OHCA).

Despite its relatively low incidence, OHCA in the workplace appears to be managed more effectively than OHCA occurring in other places, which encourages the setting up of first-aid programmes in certain companies. Further studies will be necessary to evaluate the benefits and the cost of this workplace health policy.

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Conflict of interest statement

None.

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Table 1: Comparison of characteristics (age, gender, some parameters of the chain of survival) of out-of-hospital cardiac arrest (OHCA) in the workplace and outside of the workplace (multivariate analysis by logistic regression)

		OHCA in the workplace	OHCA outside of the workplace	Adjusted Odds Ratio
Age (years)	Mean (SD)	50.3 (10.4)	66.3 (19.0)	0.96 (0.95-0.98)*
Gender (female vs male)	N (%)	11 (18.0 %)	790 (35.3 %)	0.53 (0.26-1.07)
Probable cardiac etiology (yes vs no)	N (%)	26 (42.6 %)	852 (38.0 %)	1.06 (0.57-1.96)
Witness present (yes vs no)	N (%)	46 (75.4 %)	1547 (69.1 %)	1.24 (0.64-2.40)
Cardiopulmonary resuscitation performed before arrival of the emergency team (yes vs no)	N (%)	18 (29.5 %)	262 (11.7 %)	2.28 (1.23-4.20)*
Electric shock delivered by firemen (yes vs no)	N (%)	24 (39.3 %)	325 (14.5 %)	2.50 (1.36-4.57)*
Intubation by the emergency physician of the prehospital care unit (yes vs no)	N (%)	53 (86.9 %)	1301 (58.1 %)	2.59 (1.13-5.94)*

SD = standard deviation

**Significant ($P < 0.05$) in multivariate analysis.*