Prevalence and risk factors for post-traumatic stress disorder in Japanese relatives of out-of-hospital cardiac arrest patients after receiving a pamphlet concerning process of grief reaction

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PURPOSE

The purpose of this study is to investigate the prospectively frequency of PTSD among relatives of sudden death patients after an intervention just giving pamphlet which narrates ordinal and complicated grief process, and self-regulating techniques, such as deep breathing.

MATERIAL AND METHODS

The Acute Critical Care Center in Juntendo Shizuoka Hospital, a 552-bed hospital of Juntendo University, is located in the Izu Peninsula in Shizuoka Prefecture.

From May 2017 to February 2018, we prospectively and consecutively provide a pamphlet to relatives of out-of-hospital sudden cardiac arrest victims who failed to obtain spontaneous circulation by advanced cardiopulmonary resuscitation. The pamphlet narrates process of ordinal and complicated grief process (**Figure1**), which was translated into Japanese from bereavement: key facts provided by The Royal College of Psychiatrists and self-regulating techniques, such as deep breathing. We also presented our research plan to check subject's psychiatric status approximately in one month from the bereavement by telephone or direct communication. Among the relatives who provided permission for this research, who were included as subjects, we investigated subject's psychiatric status using the Impact of Event Scale-Revised (IES-R). (**Figure 2**) Exclusion criteria was the relatives who would not receive contact from our staffs or there were no relatives of the victims. IES-R over 24 was defined as PTSD.

RESULTS

During the investigation period, there were 54 relatives of the 54 dead patients (victims) who provided permission of entry of this research and these 54 relatives were included as subjects. The all subjects and victims were Japanese. Among them, there 24 subjects whose the IES-R was 0 and there were 5 (9.3%) PTSD in approximately one month from the bereavement. And there were no relatives who received psychiatric

DISCUSSION

This is the first report to demonstrate that there was 9.3% PTSD in one month from the bereavement among Japanese relatives of sudden death victims after an intervention just giving pamphlet which narrates ordinal and complicated grief process. And younger age of the victims and exogenous cardiac arrest was independent risk factor of high score of the IES-R.

Table 1a. Relationship between variables and impact of event scale: IES			
Variables	Male	Female	p value
Victims' sex	n = 32 8.1 ± 13.8	n = 22 5.9 ± 15.4	n.s.
Suicide	yes n = 3 19.3 ± 16.5	no n = 51 6.5 ± 14.1	p = 0.08
Place	Home n = 40 7.6 ± 15.0	no home (nursing home) n = 14 (n = 4) 8.0 ± 15.0 (1.5 ± 3.0)	n.s.
Witness collapse by family	yes n = 42 7.5 ± 14.7	no n = 12 6.3 ± 14.0	n.s.
Relatives' spouse	yes n = 31 7.5 ± 13.5	no n = 23 6.7 ± 15.9	n.s.

Table 1b. Relationship between variables and impact of event scale: IES			
Variables	Exogenous	Endogenous	p value
Cause of death	n = 10 20.5 ± 23.9	n = 44 4.2 ± 9.3	p ≤ 0.01
Inquest post-mortem	yes n = 24 9.3 ± 12.7	no n = 30 5.6 ± 15.7	p = 0.01
Relatives' parent	yes n = 6 22.8 ± 26.1	no n = 48 5.3 ± 11.3	p ≤ 0.01
Relatives' child	yes n = 14 0.9 ± 1.9	no n = 40 9.4 ± 16.2	p ≤ 0.01
Relatives' sex	Male n = 20 2.8 ± 5.4	Female n = 34 9.8 ± 17.3	p = 0.1

Table 2. Result of a multivariate analysis		
A multivariate analysis revealed the following significant predictors of high score of IES-R: Age (LogWorth 2.5, p < 0.01) and exogenous cardiac arrest (LogWorth 2.5, p < 0.01).		
Variable	LogWorth	P value
Age	2.6	0.002
Exogenous/endogenous	2.5	0.003
Sex of relatives	1.3	0.05
Relatives: Parent	1.2	0.07
Death inquests	0.8	0.15
Relatives: Child	0.2	0.57
Suicide	0.1	0.80

Table 3. Frequency of post-traumatic stress disorder (PTSD) among bereaved families in previous reports					
Author	PTSD	Evaluation Time	Subject	Number	Frequency (%)
Jahres	IES > 30	90 day	Adult relatives of CPA CPR witness No CPR witness	266 304	27 41
Jahres	IES > 30	1 year	Adult relatives of CPA CPR witness No CPR witness	198 210	20 32
Zimmerli	?	?	Adult relatives of CPA	101	40
Ingles	IES-R > 25	0.5 - 10 years	Adults relative ≤ 45 years of CPA	103	44
Present	IES-R > 25	30 days	Adult relatives of CPA	54	9

We summarized frequency of PTSD among bereaved families in **Table 3** using our results and previous reports which showed number or frequency of PTSD among bereaved families. Based on these reports, definition of PTSD based on score of the IES-R and timing of investigation were different. Among them, frequency of PTSD among bereaved families was 9-44% and our results was minimum. Our investigation period was the most earliest. Generally, long duration from bereavement tends to decrease frequency of PTSD because PTSD can obtain spontaneous remission as chronological change. In addition, we selected the minimum level of score (IES-R > 24) as definition of PTSD among the reports in Table 3, indicating most loose of definition of PTSD. Accordingly, our minimum frequency of PTSD from bereavement is not based on timing of investigation and definition of PTSD.

Whealin et al reported results of study examined risk and resilience factors associated with PTSD in an ethno-racially diverse sample of Hawai'i National Guard members. As a result, when controlling for other variables, they identified Japanese-American had an inverse relation to PTSD when compared to other nationality. This difference of tolerance of ethnic for stress may explain the low prevalence of PTSD after bereavement in this study. In addition, we made intervention to provide pamphlet which described process of ordinal and complicated grief process and self-regulating techniques. This intervention might reduced frequency of PTSD in relatives after bereavement.

CONCLUSION

The present study demonstrated that there was 9.3% PTSD in one month from the bereavement among Japanese relatives of sudden death victims after an intervention just giving pamphlet which narrates ordinal and complicated grief process. This frequency was minimum in comparison with previous reports. And younger age of the victims and exogenous cardiac arrest was independent potential risk factor of PTSD.