

Outcomes of In-Hospital Cardiopulmonary Resuscitation among Cancer Patients: Experience from Pakistan

Waleed Zafar*

Department of Cancer Registry and Clinical Data Management, Shaukat Khanum Memorial, Cancer Hospital & Research Centre, Lahore, Pakistan

*Corresponding author: Waleed Zafar, Department of Cancer Registry and Clinical Data Management, Shaukat Khanum Memorial, Cancer Hospital & Research Centre, Lahore, Pakistan, Tel: 92-42-3590-5000; Fax: 92-42-3594-5206; E-mail: waleedz@skm.org.pk

Received date: January 21, 2016; Accepted date: March 24, 2016; Published date: March 28, 2016

Copyright: ©2016 Zafar W. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Introduction

Cardiopulmonary resuscitation (CPR) is a component of the standard of care for hospitalized cancer patients who undergo cardiac arrest. Typically, an emergency code, sometimes called “code blue”, is called to alert health care personnel within the hospital whenever a patient collapses suddenly or is perceived to need urgent life-saving care. Not all episodes of code blue, though, result in a CPR [1]. Many cancer patients with cardiopulmonary arrest may not benefit from a CPR [2-4]. The aim of this study was to review outcomes of all episodes where “code blue” was called in a tertiary care cancer-specialized hospital in Pakistan over a forty months period. Reports from a variety of socio-economic and cultural contexts are likely to paint a more nuanced global picture and will help in development of interventions that are specific to medical needs of subgroups of patients, improve upon current outcomes, and are more responsive to patients’ and their families’ stated preferences. Shaukat Khanum Memorial cancer hospital & research centre located in Lahore, Pakistan is a 180-bed non-profit tertiary-care cancer-specialized hospital. From the hospital’s electronic medical records we obtained a list of all episodes of “code blue” calls from September 2010 to December 2013. Multivariate logistic regression analyses were used to test the association of clinical characteristics with the primary outcome of survival to discharge. A total of 646 code blue calls were included in the analysis (Table 1).

Characteristics	All episodes of code blue		All who patients received CPR	
	N	%	N	%
Episodes of code blue on unique patients				
1	547	92.1	-	-
2	45	7.6	-	-
3 or more	2	0.3	-	-
Age of patients in years				
Less than 18 years	213	33.0	126	32.5
18 years or older	433	67.0	262	67.5
Mean age & Standard deviation	33.6	23.2	33.8	23.3
Sex of unique patients				
Female	248	41.5	155	39.9
Male	349	58.5	233	60.1

Type of tumour				
Solid organ				
Head and neck	78	13.1	49	12.6
Gastrointestinal	76	12.7	44	11.3
Lungs	16	2.7	11	2.8
Musculoskeletal	37	6.2	24	6.2
Others	169	28.3	100	25.8
Haematological				
Lymphoma	135	22.6	96	24.7
Myeloma	1	0.2	1	0.3
Leukaemia	79	13.2	59	15.2
Other haematological malignancies	5	0.9	4	1.1
Metastasis for solid organ tumours				
No	224	59.1	137	59.8
Yes	155	40.9	92	40.2
Location of code blue (all episodes)				
Emergency department	153	23.7	70	18.0
Intensive care unit	231	35.8	208	53.6
Inpatient floor	219	33.9	100	25.8
Other	43	6.6	10	2.6
CPR done				
Yes	388	60.0	-	-
No	258	40.0	-	-
Reason CPR not done				
Respiratory distress	147	56.3	-	-
Seizures	43	16.5	-	-
DNR agreed after code	19	7.3	-	-
Accidental code	14	5.4	-	-
Other reasons e.g., hypoglycaemia	35	13.8	-	-

Originally published in Zafar W, Ghafoor I, Jamshed A, Gul S, Hafeez H. Outcomes of in-hospital cardiopulmonary resuscitation among patients with cancer: Experience from Pakistan. American Journal of Hospice and Palliative Care, 2015. pii: 1049909115617934.

Table 1: Demographic and clinical characteristics of cancer patients that triggered code blue calls

CPR was performed in 388 (60%) of these calls. For every 20 episodes of CPR among cancer patients of all ages, only one resulted in a patient's survival to discharge even though in 46.6% episodes there was a return of spontaneous circulation (Tables 2 and 3).

	N	%
Rhythm at initiation of CPR		
Asystole	239	65.7
Pulseless Electrical activity	110	30.2
Ventricular tachycardia	15	4.1
Return of spontaneous circulation after CPR		
No	197	53.4
Yes	172	46.6
Survived 6-24 hours	44	
Survived more than 24 hours	86	
Survival to discharge		
No	369	95.1
Yes	19	4.9

Originally published in Zafar W, Ghafoor I, Jamshed A, Gul S, Hafeez H. Outcomes of in-hospital cardiopulmonary resuscitation among patients with cancer: Experience from Pakistan. American Journal of Hospice and Palliative Care, 2015. pii: 1049909115617934.

Table 2: Outcomes among cancer patients who received a cardiopulmonary resuscitation (CPR)

	Adjusted odds ratio	95% Confidence interval
Male (Compared to females)	1.434	0.50-3.58
Paediatric (Compared to adults)	2.10	0.79-5.57
Primary diagnosis (Compared to non-metastatic solid organ tumours)		
Metastatic solid organ tumours	0.86	0.28-2.65
Haematological malignancies	0.30*	0.09-0.95
Rhythm at initiation of CPR (Compared to Asystole)		
Ventricular tachycardia	1.67	0.20-14.1

Pulseless electrical activity	1.21	0.45-3.25
*Significant at p=0.05		
Originally published in Zafar W, Ghafoor I, Jamshed A, Gul S, Hafeez H. Outcomes of in-hospital cardiopulmonary resuscitation among patients with cancer: Experience from Pakistan. American Journal of Hospice and Palliative Care, 2015. pii: 1049909115617934.		

Table 3: Adjusted odds of survival to discharge among all cancer patients who received cardiopulmonary resuscitation (CPR)

Among patients who received CPR, 201 (52.2%) had a return of spontaneous circulation. Out of these, 75 patients survived for less than 6 hours, 44 survived longer than 6 hours but less than a day and 85 survived more than 24 hours. Only 19 out of these 85 patients survived to discharge. No association was found between the type of rhythm at initiation of CPR and likelihood of survival to discharge. Several recent studies have looked at outcomes of CPR among cancer patients. A meta-analysis identified 42 studies of survival to discharge among adult cancer patients who underwent in hospital CPR. It found an overall survival to discharge across all studies to be 6.2% [3]. Our finding of 4.9% patients surviving to discharge is thus broadly in line with the international data. A notable finding of this study is that about half of the cancer patients who received CPR had a return of spontaneous circulation. However, even among those who survived for more than 24 hours, only 2 out of every 9 patients survived to discharge. This certainly does not mean that there are no cancer patients with advanced disease who will benefit from resuscitation. More work is, however, needed to identify those subgroups of cancer patients who are likely to benefit from CPR. In this context, institution of rapid response systems for early identification of patients who are at high-risk of deterioration is likely to improve outcomes of resuscitation [5-7]. Another important implication of this study is the need for attending physicians to engage with patients and their families early to encourage them to document their advance directives regarding resuscitation. Data, such as presented in this study, that most advanced cancer patients do not benefit from aggressive end-of-life interventions, are likely to justify and help in the early conduct of such discussions. Training of physicians in communication skills, availability of decision support tools, and use of multiple media to engage with patients and families are also likely to increase the proportion of cancer patients with documented advance directives that are based in realistic expectations about interventions and their outcomes.

In conclusion, most cancer patients who receive in-hospital CPR do not survive to discharge and do not appear to benefit from aggressive and expensive resuscitation. Advance directives by patients limiting such interventions and their proper documentation will help in provision of care that is humane, compassionate, consonant with patients' wishes for a dignified death, and not wasteful of resources. Patients' early appreciation of the limited benefits of CPR in advanced cancer is likely to help them formulate such advance directives.

References

1. Caissie A, Kevork N, Hannon B, Le LW, Zimmermann C (2014) Timing of code status documentation and end-of-life outcomes in patients admitted to an oncology ward. Support Care Cancer 22: 375-381.
2. Ewer MS, Kish SK, Martin CG, Price KJ, Feeley TW (2001) Characteristics of cardiac arrest in cancer patients as a predictor of survival after cardiopulmonary resuscitation. Cancer 92: 1905-1912.

-
3. Reisfield GM, Wallace SK, Munsell MF, Webb FJ, Alvarez ER, et al. (2006) Survival in cancer patients undergoing in-hospital cardiopulmonary resuscitation: A meta-analysis. *Resuscitation* 71: 152-160.
 4. Walling A, Lorenz KA, Dy SM, Naeim A, Sanati H, et al. (2008) Evidence-based recommendations for information and care planning in cancer care. *J Clin Oncol* 26: 3896-3902.
 5. Jones DA, DeVita MA, Bellomo R (2011) Rapid-response teams. *N Engl J Med* 365: 139-146.
 6. Winters BD, Weaver SJ, Pfoh ER, Yang T, Pham JC, et al. (2013) Rapid-response systems as a patient safety strategy: a systematic review. *Ann Intern Med* 158: 417-425.
 7. Maharaj R, Raffaele I, Wendon J (2015) Rapid response systems: a systematic review and meta-analysis. *Crit Care* 19: 254.