

Compassionate extubation for a peaceful death in the setting of a community hospital: a case-series study

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Background: The use of compassionate extubation (CE) to alleviate suffering by terminating mechanical ventilation and withdrawing the endotracheal tube requires professional adherence and efficiency. The Hospice Palliative Care Act, amended on January 9, 2013, legalizes the CE procedure in Taiwan.

Methods: From September 20, 2013 to September 2, 2014, the hospice palliative care team at a community hospital received 20 consultations for CE. Eight cases were excluded because of non-qualification. Following approval from the Ethics Committee, the medical records of the remaining 12 patients were reviewed and grouped by the underlying disease: A, “terminal-stage cancer”; B, “non-cancer out-of-hospital cardiac arrest”; and C, “non-cancer organ failure”. Time to extubation using a cut-off at 48 hours was assessed.

Results: The mean ages of patients (standard deviation) in groups A, B, and C were 66.3 (14.9) years, 72 (19.1) years, and 80.3 (4.0) years, respectively. The mean number of days of intubation at consultation were 6.8 (4.9), 7.3 (4.9), and 179.3 (271.6), respectively. The mean total doses of opioids (as morphine-equivalent dose) in the 24 hours preceding CE were 76 (87.5) mg, 3.3 (5.8) mg, and 43.3 (15.3) mg. The median times from extubation (range) to death were 97 (0.2–245) hours, 0.3 (0.2–0.4) hours, and 6.1 (3.6–71.8) hours. Compared to those requiring <48-hour preparatory time, patients requiring >48 hours to the moment of CE were younger (62.8 years vs 75.5 years), required a mean time of 122 hours (vs 30 hours) to CE ($P=0.004$), had shorter length of stay (33.3 days vs 77.8 days), required specialist social worker intervention in 75% of cases (vs 37.5%), and had a median duration of intubation of 11.5 days (vs 5.5 days).

Conclusion: CE was carried out according to protocol, and the median time from extubation to death varies determined by the underlying disease which was 0.3 hour in patients admitted after out-of-hospital cardiac arrest and 97 hours in patients with advanced cancer.

Keywords: compassionate extubation, palliative extubation, good death, hospice care, quality of death

Background

When medical intervention fails to reverse the course of multiorgan failure in a dying patient, the continuing presence of an endotracheal tube in the throat and futile mechanical ventilation (MV) is regarded as an act of prolonging an agonizing death. Not every conscious patient with a terminal illness who is intubated for MV can tolerate the suffering caused by the endotracheal tube, and patients may wish to die without the endotracheal tube in their upper airways. Compassionate extubation (CE), also known as palliative extubation, is performed to alleviate suffering by termination of MV and withdrawal of the tube, thus avoiding the prolongation of death. This procedure has been the subject of an ethical dilemma debated by two groups of clinicians with

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opposite viewpoints.¹⁻⁵ CE is a medically, morally, and ethically justified act to ease death and should not be equated to physician-assisted suicide or even euthanasia.⁶⁻⁹ CE has been widely practiced around the world, but it is not as common in Asian population. Intensivists and doctors in the intensive care unit (ICU) are prone to use the term “terminal extubation” to describe the practice of withdrawing life-sustaining MV when death is expected.

The Hospice Palliative Care Act, amended on January 9, 2013, legalizes the procedure of CE in Taiwan (Supplementary material). Before this legal amendment, each application for CE was subjected to a tedious process and sent to the Ethics Committee for an ethical and moral debate, rendering a peaceful death without an endotracheal tube in the airway rarely achievable because the process was not completed in a timely manner.

CE is not simply a medical procedure to remove the endotracheal tube and MV during end-of-life care. In contrast, it requires a specialist team approach to enable early bereavement to begin at the earliest possible time among the family members and caregivers to provide excellent psychological support and symptom control (if the patient regains consciousness after CE), facilitate legally sound documentation, and lessen any potential negative impacts on the clinical staff.

Thus far, this topic has not been well studied among East Asian populations. Here, the author reports his experience with this practice in the setting of a community teaching hospital with an associated hospice ward, by performing a retrospective chart review. From the current analysis, the author further discusses on the following issues: Will all of the extubated patients die shortly after the CE? Why should we not routinely provide palliative sedation before, during, and after extubation? Where did the extubation procedure take place, the ICU or hospice ward? Who was the one to pull the tube: a doctor, nurse, respiratory therapist, or family member? How long will it take from the time of consultation for compassionate withdrawal to that of the moment of extubation?

Methods

Setting

Kuang Tien General Hospital (KTGH), a 1,300-bed teaching hospital in Taichung, central Taiwan, has established a home care hospice, a hospice ward, an interdisciplinary hospice palliative care (HPC) consulting team, and an accredited HPC Physician Specialist Training Program led by the author. After the amendment to the Hospice Palliative Care Act on

January 9, 2013, which legalized the procedure of CE in Taiwan, the KTGH HPC team established its own protocol for performing CE for eligible applications from outside the hospice while conformed to the requirements of the law. Before the legal amendment, applications for CE underwent a tedious review process and were sent to the Ethics Committee for an ethical and moral debate, rendering a peaceful death without an endotracheal tube in the airway rarely achievable because the process was not completed in a timely manner. The aim was to analyze 1 year of our experience with CE since its legalization through chart reviews. This study was approved by the KTGH Institutional Review Board (IRB), with a Certificate of Approval numbered KTGH-IRB-10340, dated October 24, 2014. Written informed consent was not obtained because all patients had passed away peacefully. Patient records were anonymized and de-identified prior to analysis.

Protocol for performing CE

KTGH's institutional protocol for performing CE was set up based on the professional guidelines, local values, and legal requirements, which has been evolved from previous version in the time when each case of CE should obtain an approval from the institutional Ethics Committee. The essential components of performing CE include the following: ensuring appropriate environment to facilitate CE; family meetings, confirming the legitimate surrogate for the patient in the family, providing psychosocial-spiritual support and instituting early bereavement care for the family, obtaining shared decisions and mutual trust, and discussing bathing, rituals, and/or prayers expected before and/or after CE; determining the necessitated presence of which staff members; preemptive use of medications such as sedation; and post-CE aftercare and documentation. Our team advocates immediate extubation rather than terminal weaning. The debriefing process for alleviating staff burnout will normally be scheduled in a following Ward Meeting. We do not relocate the patient for the procedure of CE because it will only prolong the whole process rendered by unnecessary steps during transfers and requires re-establishment of mutual trust. Thus, if a patient requires continuing end-of-life care at the hospice ward, he/she shall be extubated first before transfer. The doctor-in-charge in the unit/ward where the patient stays will execute the procedure of extubation.

Patients and data collection

All consultations received by the HPC team to evaluate for CE in the period from the proclamation of the amendments of the Hospice Palliative Care Act on January 9, 2013, legalizing

the procedure of CE to September 30, 2014, were included. If CE was not conducted for the purpose of abrogation of life-prolonging support, such as early extubation to truncate the standard weaning process or switching from MV to noninvasive positive pressure ventilation, then the consultation was excluded. After obtaining IRB approval, all medical charts and electronic medical records of all patients who had been observed and attended by the HPC team on the basis of formal written consultation for CE were reviewed using a preformatted case report form. Subsequently, the collected data were de-identified by removing all personal information data, including name, date of birth, identification code, and even the chart number.

Data including sex, age, religious affiliation, length of stay, days of intubation at consultation, total dose of strong opioids (as oral morphine-equivalent dose) in the preceding 24 hours before extubation, mean arterial pressure, heart rate, and respiratory rate at extubation, individuals who acted as a proxy and signed the consent form for extubation, and the proportion of cases requiring specialist social worker counseling were collected.

Data regarding seven post-CE symptoms or signs of distress were recorded: respiratory distress, agitation, pain, airway secretion, seizure, stridor, and delirium.

Grouping of patients

Patients were grouped into three groups, according to the underlying disease or medical condition, that prompted the intubation and MV: group A, “terminal-stage cancer”; B, “non-cancer out-of-hospital cardiac arrest (OHCA)”; and C, “non-cancer organ failures”.

Outcome measures

Time from consultation to extubation and time from extubation to death were measured. All patients were further analyzed according to the preparation time required to reach the moment of extubation (time to extubation) using a cut-off at 48 hours.

Results

From September 20, 2013 to September 2, 2014, the KTG HPC team received 20 consultations filed for CE. Seven cases were rejected by the HPC team because of qualification issues. One case was excluded from the review because the procedure was classified as early extubation, not CE. The remaining 12 patients who underwent CE died peacefully after receiving continuing care provided by the HPC interdisciplinary team until the last breath.

The median age was lower (63.5 years) in patients with terminal-stage cancer than the other two groups of patients (82 years and 81 years, respectively). With regard to the length of stay, patients in group B had the shortest stay (9 days; standard deviation [SD], 6.9), and patients in group C had the longest stay (185.7 days; SD, 274) and most days of intubation with MV at the time of consultation (179.3 days; SD, 271.6; Table 1).

The mean total dose (SD) of oral morphine-equivalent strong opioids prescribed in the preceding 24 hours prior to extubation was 76 (87.5) mg, 3.3 (5.8) mg, and 43 (15.3) mg in groups A, B, and C, respectively (Table 1).

There was no statistically significant difference among the three groups in terms of the time duration from consultation

Table 1 Demographic data of patients grouped by their underlying illness, days of intubation, strong opioid requirement, and selected physiologic abnormalities at the moment of compassionate extubation

	Group A	Group B	Group C
	Terminal-stage cancer	Non-cancer OHCA	Non-cancer organ failures
Men: women	3:3	2:1	3:0
Mean age (SD) (years)	66.3 (14.9)	72 (19.1)	80.3 (4.0)
Median age (years)	63.5	82	81
Length of stay (days)	28.5 (28.6)	9 (6.9)	185.7 (274)
Days of intubation at consultation, mean (SD)	6.8 (4.9)	7.3 (4.9)	179.3 (271.6)
Level of consciousness	E3M5VT, E1M1VT, E4M4VT, E4M4VT, E4M6VT, E1M2VT	E1M1VT, E1M1VT, E2M2VT	E1M1VT, E3M4VT, E3M4VT
Mean arterial pressure at extubation (mmHg)	78.1 (21.6)	81.1 (16.4)	81.2 (4.0)
Heart rate (bpm)	95.8 (25.6)	78.3 (27)	79 (25.5)
Respiratory rate (bpm)	18.7 (5.2)	10.7 (1.2)	16.7 (5.8)
Total dose of strong opioids as oral morphine in preceding 24 hours before extubation (mg)	76 (87.5)	3.3 (5.8)	43.3 (15.3)
Place where CE took place	All in an ICU	All in an ICU	ICU: 2; RCW: 1

Notes: Level of consciousness is represented using Glasgow coma scale with three parameters: best eye response (E), best verbal response (V), and best motor response (M); VT means verbal response affected by endotracheal intubation. Only one patient in group A with E4M6VT had clear consciousness.

Abbreviations: CE, compassionate extubation; ICU, intensive care unit; mmHg, millimeter of mercury; OHCA, out-of-hospital cardiac arrest; RCW, respiratory subacute care ward; SD, standard deviation.

Table 2 Patients underwent CE grouped by the underlying illness with recorded time from consultation to CE, and from CE to death and the proportion of patients requiring specialist social worker intervention

	Group A Terminal-stage cancer	Group B Non-cancer OHCA	Group C Non-cancer organ failures
Time (hours) from consultation to extubation, mean (SD)*	60 (53.7)	61.3 (52.2)	65.2 (69.2)
Time (hours) from extubation to death, median (range)	97 (0.2–245)	0.3 (0.2–0.4)	6.1 (3.6–71.8)
Person who signed consent for extubation	Spouse: 0 Child: 4 Self: 1 Sibling: 1	Spouse: 1 Child: 2 Self: 0 Sibling: 0	Spouse: 1 Child: 2 Self: 0 Sibling: 0
Proportion of cases who required specialist social worker intervention	50%	33%	67%

Notes: *There was no statistically significant difference among three groups in terms of the time from consultation to extubation, $P=0.8968$ (Kruskal–Wallis test).

Abbreviations: CE, compassionate extubation; OHCA, out-of-hospital cardiac arrest; SD, standard deviation.

to extubation. The pre-CE preparatory process in this hospital required a mean time of up to 65.2 hours. Notably, there were considerable differences in median time to death after CE, with only 0.3 hours in patients in group B, 6.1 hours in patients in group C, and 97 hours in patients in group A. The longest time to death was 245 hours (approximately 10 days) after CE in a patient with cancer (Table 2).

Only one of 12 patients in the present study was able to personally sign a written informed consent for the procedure of CE (Table 2). Family-initiated request for CE was the most common setting. The representative caregiver who signed the consent form for CE was the spouse, child, or sibling. All immediate extubations, meaning having no prelude of terminal wean, were performed by an intensivist in the ICU.

Compared to those requiring <48-hour preparatory time, patients requiring >48 hours to the moment of CE were younger (62.8 years vs 75.5 years), required a mean time of 122 hours (vs 30 hours) to CE ($P=0.004$), had shorter length of stay (33.3 days vs 77.8 days), required specialist social worker

intervention in 75% of cases (vs 37.5%), and had a median duration of intubation of 11.5 days (vs 5.5 days; Table 3).

Postextubation symptomatology and signs of distress

Seven types of symptoms or signs of distress were recorded. With regard to the preselected post-CE symptoms or signs of distress, no seizures were documented in any of the patients. No distress was observed after CE in four (33%) of 12 patients, including two with OHCA. Post-CE stridor was auscultated in five patients. The CE protocol in this hospital did not require compulsory palliative sedation or proactive use of intravenous steroid immediately before CE. Nevertheless, the families were notified that the unconscious patient would not suffer when stridor developed. Three of 12 patients (25%) exhibited four or more types of symptoms or distress. The only conscious patient exhibited all listed postextubation symptoms except seizure. Preemptive sedation was not an option as determined by the family.

Table 3 Patients grouped by time from consultation to compassionate extubation for aborting endotracheal tube and intubation-emergent sufferings at the cut-off of 48 hours

	Less than 48 hours	Longer than 48 hours
Number of patients	8	4
Mean duration (SD)* (hours)	30 (10.9)	122 (44.7)
Median duration* (hours)	28.35	132.8
Age, mean (SD) (years)	75.5 (13.2)	62.8 (14.2)
Age, median (years)	82.5	60
Religion vs non-religion	6:2	4:0
Length of stay, mean (SD) (days)	77.8 (172)	33.3 (31.9)
Social worker intervention (Y:N)	3:5 (37.5%)	3:1 (75%)
Days of intubation at consultation, median	5.5	11.5
Group		
A: terminal-stage cancer	4	2
B: non-cancer OHCA	2	1
C: non-cancer organ failures	2	1

Note: * $P=0.004$, Mann–Whitney *U*-test.

Abbreviations: OHCA, out-of-hospital cardiac arrest; SD, standard deviation.

Discussion

Over a 1-year period, this 1,300-bed community teaching hospital with a full-fledged HPC service treated 12 endotracheal intubated patients who required CE for a peaceful death with a quality perceived to be satisfactory by their loved ones, family members, and medical staff.

End-of-life care in the ICUs worldwide has appreciated highly variable practices even in situations when death is imminent and withdrawing MV is acceptable. A recent retrospective study reveals that in only half of dying intubated patients was compassionate termination of MV performed.¹⁰ A survey of the invited faculty who are interested in ethics of a global professional body of critical care medicine in 2013 demonstrates that 24% of those expert intensivists never practice withdrawal of ventilation at all, whereas, in those who do, only 41% of them perform immediate extubation instead of terminal wean.¹¹

When a decision to proceed with ventilator withdrawal is made by the family or the patient, the referring medical team and HPC team must try their best to shorten the patient's suffering, particularly due to ventilation-related issues (endotracheal intubation-emergent sufferings). The mean time to extubation in the present analysis was approximately 65 hours, during which expert evaluation for eligibility and prognosis confirmation, family meetings, and written documentation process can be performed in the setting of a community hospital. This time to extubation becomes a measurable, evaluable, and auditable outcome measure to assess the team's preparedness, competence, and performance. At the same time, preparation for CE should integrate the local cultural context, be sensitive to the family members' anxiety as well as the stress on the care team responsible for performing the extubation procedure, and be in accordance with the legal requirements by appropriate documentation.

The true purpose of CE should be to abrogate any prolongation of death, remove the discomfort arising from endotracheal intubation, and provide complete expert symptom control until death. In order to increase satisfaction of family member, early bereavement care and continuous psychosocial support for the family members and caregivers are needed. Thus, the time to death after CE analyzed in the present study represents a window helping us perceive the necessity and importance of post-CE aftercare. In contrast to patients intubated after an OHCA event who failed to recover, in whom time to death was slightly less than 20 minutes, the time to death in a patient with terminal-stage cancer may extend to approximately 10 days. Expert hospice care with good symptom control is, therefore, urgently required to

guarantee a peaceful death. The range of time to death after CE in the current report is similar to those reported in the literature. The range of time to death was 0–165 hours in a group of 159 patients undergoing palliative withdrawal of MV.¹⁰ It is easily understood that palliative withdrawal of MV in the setting of ICU may tend to be performed quite near the end of life which will translate into somewhat shorter time to death.

In unconscious patients contemplating immediate extubation who initially do not require morphine or any sedative, preemptive use of infusional morphine or benzodiazepine aiming to reduce potential postextubation respiratory distress and discomfort has been recommended in the literature.^{3,12} Preemptive sedation (anticipatory dosing) or continuous morphine infusion before extubation is common in Western societies.^{3,6,13,14} More recently, Billings, in a study from the Massachusetts General Hospital, USA, argued strongly for preemptive deep sedation or even general anesthesia, suggesting that clinicians are limited in their ability to recognize distress and tend to under-medicate patients during the post-CE period.³ While agreeing with Billings that anesthesia may be indicated for patients who prefer to minimize the risk of suffering and accept a greater risk for hastening death, Truog et al have argued that this practice would not be appropriate for patients who place a higher value on preventing the risk of hastening death.¹⁴ From the Asian perspectives, one might also argue against this preemptive use which may likely be unnecessary and unnatural in pursuing a non-processed peaceful death. Therefore, the author of the present article would like to propose that the practice of CE be separated into CE with or without concurrent preemptive sedation. In patients who are unconscious, such as those who did not recover after an episode of OHCA in the present study, anticipatory dosing is completely unnecessary if postextubation stridor as a frequent phenomenon can be well explained to the family before the procedure is performed. Nevertheless, in patients who are already receiving morphine for pain control or quelling respiratory distress, or receiving palliative sedation for agitation or delirium, upward titration of these agents is certainly justifiable.

Medical staff should lead, provide support, and give ample time for the designated surrogate and/or the family while they undergo the ordeal of making a decision on when to perform CE.

The limitation of the present study may be the low case number; however, the aim of our research was to reflect the experience derived from a community hospital setting, which may not be the same as the experiences in academic medical

centers, where greater resources or staff may contribute to a different scenario of their CE practice.

Because of the nature of a retrospective study, postextubation symptomatology was not captured using validated instruments, and also may not be consistently documented in the chart. Thus, the absence of documentation does not equate to the absence of symptoms. Death with dignity does not come spontaneously or easily when a patient has an endotracheal tube in place, particularly in East Asia. The Japan Hospice and Palliative Care Evaluation (J-HOPE) study, a large nationwide study of bereaved individuals whose family member died at palliative care units, revealed that opinions regarding legalization of death with dignity among the bereaved are inconsistent; the authors conclude that there is no consensus regarding legislation of these issues in Japan.¹⁵ Fortunately, CE in qualified patients is legalized in Taiwan. Our experience shows that only six of ten consultations filed for CE fulfill the eligibility criteria for the procedure. In ineligible cases, education regarding the true meaning and impact on patient and family care and overall health care should be effectively administered to staffs and clinicians across all disciplines in the setting of a community hospital.

Conclusion

CE was carried out according to protocol, and the median time from extubation to death varies determined by the underlying disease which was 0.3 hour in patients admitted after OHCA and 97 hours in patients with advanced cancer. A good quality of death must be ensured, through not only an efficient CE but also aftercare.

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Disclosure

The author reports no conflicts of interest in this work.

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Supplementary materials

Article seven of the Taiwan Hospice Palliative Care Act amended on January 9, 2013.

Article seven

Non-applying cardiopulmonary resuscitation (CPR) or life-sustaining treatment (LST) shall be complied with the following:

1. Be diagnosed to be a terminal illness patient by two physicians.
2. A signed letter of intent is required. However, a letter of intent signed by a minor shall obtain the consent of his/her legal representative. When a minor is unable to express his/her will, the legal representative shall sign the letter of intent.

The physicians in the preceding paragraph, subparagraph 1, shall be qualified specialist physicians.

If a terminal illness patient, who has become unconscious or failed to express clearly his/her will, has not signed the letter of intent of the preceding paragraph, subparagraph 2, his/her close relative may replace by signing a consent. For those who do not have close relatives, a medical advice for the best interest of the terminal illness patient would be issued instead after the examination by the hospice palliative care team. The consent or the medical advice shall not contradict

the expressed desire of the terminal illness patient before being unconscious or unable to express his/her will.

The close relative in the preceding paragraph includes the following:

1. Spouse
2. Adult children and grandchildren
3. Parents
4. Siblings
5. Grandparents
6. Great grandparents, great grandchildren, or third-degree collateral relative by blood
7. First-degree direct relation by marriage.

For those terminal illness patients who fulfill those set forth in paragraphs 1–4 about non-applying CPR or LST, the original CPR or LST treatment may be terminated or withdrawn.

The consent of the close relative in paragraph 3 may be done by one person; if there is no unanimity among several closest relatives, a priority list in accordance with the listing of the paragraph 4 shall be set up. If the consent of one with lower priority is against the will of one with higher priority, the one with higher priority shall show his/her will in written before the non-application, termination, or withdrawal of CPR or LST (<http://law.moj.gov.tw/Eng/LawClass/LawAll.aspx?PCode=L0020066>).

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