Palliative Care Rounds

Transport Home and Terminal Extubation by Emergency Medical Services: An Example of Innovation in End-of-Life Care

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Abstract

For most terminally ill patients, the preferred place of death is home. Previous literature has demonstrated the feasibility of at-home terminal extubation performed by critical care and hospice physicians. This case report describes a terminal extubation performed by a paramedic under the direct supervision of an Emergency Medical Services physician in the patient's home. Guided by a comprehensive plan and logistical support from a team of hospice providers, a successful out-of-hospital terminal extubation is possible. To truly achieve patient-centered care at end of life, the choice for an out-of-hospital death is necessary. J Pain Symptom Manage 2019;58:355–359. © *2019 American Academy of Hospice and Palliative Medicine. Published by Elsevier Inc. All rights reserved.*

Key Words

EMS, terminal extubation, home, palliative care

Introduction

Modern medicine can prolong life in unprecedented ways. Unfortunately, sometimes it does so at the expense of quality of life.[1] In case of emergency, patients may be placed on life support before their true wishes can be determined.[2] Sometimes, patients may originally wish to be placed on life support but later decide they do not want continued support given their evolving prognosis. In either case, at some point, it may become appropriate to withdraw life support including artificial ventilatory support. The number of deaths after the withdrawal of life support has increased over time.[3] Today, most patient deaths in the intensive care unit (ICU) are due to withholding/withdrawal of life-sustaining treatment that was prolonging life.[3,4] For most terminally ill patients, the preferred place of death is home.[4] Yet, many patients who express a desire to die at home ultimately die in a hospital.[5]

Terminal extubation is the withdrawal of ventilatory support accompanied by the removal of an endotracheal tube.[6] A patient who is being terminally extubated is expected to die as a result of the loss of ventilator support.[3] Previous literature has demonstrated the feasibility of at-home terminal extubation performed by critical care and hospice physicians (including fellows and residents)[7–9] together with respiratory therapists.[10] Although transport and provision of critical care for patients outside the hospital is the primary practice of paramedics,[11] there have been no published reports of paramedics performing at-home terminal extubation. This case report will describe a terminal extubation performed by a paramedic under the direct

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supervision of an Emergency Medical Services (EMS) physician.

Case Description

The patient was a 24-year-old woman with a history of prenatally transmitted HIV. She had multiple comorbidities related to her HIV status including esophagitis, membranous nephropathy, cachexia, chronic diarrhea, chronic cough, and pseudomonas bacteremia. Her chronic illness was further complicated by a history of medication noncompliance. She was admitted to the hospital for respiratory distress, pulmonary edema, and pneumonia. On hospital Day 11, she experienced respiratory failure in the context of her advanced illness. This necessitated intubation and ventilator support after an unsuccessful trial of noninvasive positive pressure ventilation. Subsequent trials of extubation failed because of her frail, declining, terminal course.

The palliative care team was consulted on ICU Day 5. The patient was tolerating the endotracheal tube and ventilator with minimal sedation, allowing her to remain awake and communicative. She expressed her wishes by writing notes and gesturing, which allowed her to actively participate in her health care decision making. Her health care team was able to establish the patient's capacity, goals of care, and understanding of disease course and was able to work toward goal concordant care. Input to assure ethical decision making included consultation by psychiatry, palliative care, and other specialists. The patient expressed her recognition that "she didn't have much time" to multiple providers though initially she was hopeful for yet another resolution to her acute illness. As the hospitalization progressed, she repeatedly expressed to the palliative care team that "no matter what," her desire was to be at home. These conversations occurred over a period of time, included the explanation of hospice care, and included family members to assure that all involved shared an understanding of the clinical realities. The patient ultimately requested terminal extubation.

The palliative care team initially formulated a plan for the patient to be terminally extubated in the ICU and then transferred by ambulance to her home. Once extubated and transported home, the hospice team was prepared to assume the continuing care of the patient. The uncertainty of how long she would live once extubated led to a discussion regarding the possibility of at-home extubation to maximize the patient's comfort and dignity while respecting her singular goal of dying at home.

On hospital Day 25, the palliative care team worked with the EMS medical director to explore the possibility of at-home extubation. At the time, no system was in place to facilitate an at-home terminal extubation. The EMS medical director agreed to travel with the EMS crew and supervise the at-home terminal extubation to allow for a calmer, and more orderly transfer of the patient, and to reduce the risk of the patient decompensating or expiring before or during transport to her home.

Once the plan was developed by the hospital care team, the EMS agency, and hospice, a family meeting was held to offer the patient the at-home terminal extubation option. The pros and cons of this approach were discussed with the patient and family. The patient and family were counseled that after extubation, the patient would likely experience respiratory distress but would not be reintubated. After extubation, the patient would be placed on a home continuous positive airway pressure (CPAP) device. They were given an opportunity to ask questions about the plan and expectations. A hospital procedure informed consent form was signed by the patient and witnessed by relevant staff members.

On the day of discharge, an EMS crew consisting of an emergency medical technician and a senior paramedic arrived in the ICU. They reviewed the case with the interdisciplinary care team and introduced themselves to the patient. The patient was transferred to the EMS ventilator and monitoring equipment, which included end-tidal CO2, before being carefully moved to the EMS stretcher. The patient was taken to the ambulance by the EMS crew and was transported to her home without the use of lights and sirens.

When the ambulance arrived at the patient's home, she was moved to her front lawn on the stretcher. It was a warm and sunny day, and the patient was given an opportunity to remain outside in the sunlight in front of her home on the stretcher for approximately 10 minutes. During that time, a plan was formulated to transfer the patient to her home. The patient's room was on the second floor. The stairway and hallways leading to her room were narrow. In a typical emergency, an intubated patient being transported out of a similar house would have been moved supine on a backboard. In this circumstance, using a backboard would have reduced the patient's comfort and dignity. Instead, the team decided to remove the monitoring equipment, place the patient in a stair-chair, and transport her carefully to her room. Once in her second-floor bedroom, the patient was transferred to her own bed and placed in a comfortable semi-Fowler's position with pillows.

When the patient signaled she was ready, the cuff of the endotracheal (ET) tube was deflated, and the ET tube and ET tube holder were removed. The patient's oropharynx was suctioned and she was placed on her CPAP device as planned. Shortly thereafter, the patient removed her own CPAP mask and expressed her desire to be placed on nasal cannula oxygen instead. She was placed on nasal cannula fed from

a home oxygen concentrator. She appeared to tolerate this with mild dyspnea, but minimal discomfort. EMS did not attempt to obtain further vital signs. Direct patient care was provided by the paramedic and emergency medical technician. The EMS medical director was present providing in-person supervision throughout.

Care was transferred to a hospice nurse who was present in the home. As the EMS team left, they were thanked by the many family members who had congregated at the home. Approximately 72 hours later, the patient expired in her home with her family present, as she wished.

Comment

This is the first known case of an adult at-home terminal extubation performed by an EMS provider reported in the medical literature. Terminal extubation can be performed for patients of any age when appropriate.[4,9,10,12] Although many published case reports have cited physicians[9,12] and respiratory therapists[3,12] as providers who typically perform terminal extubation procedures, the advanced airway management skills of paramedics would allow for proficiency in terminal extubation with minimal additional procedural trainings.

Recently, some EMS agencies have sought to expand the traditional paramedic scope of practice beyond emergent care and transport. Under programs termed both community paramedicine and mobile integrated health care, paramedics with additional training are treating chronic illness on an outpatient basis, providing preventative care, and performing other health services designed to fill gaps in the current health care system. These additions to many training programs include chronic disease pathophysiology, diagnostic and triage skills, and cultural awareness.[13–15] One such example is the Paramedics Providing Palliative Care at Home Program in which paramedics have received enhanced training in specific medications for symptom management such as hydromorphone, haloperidol, and morphine for symptoms of breathlessness. This program is yet another way paramedics' scope is expanding, allowing paramedics to improve patients' quality of life without transporting them to the hospital.[16]

Training paramedics to perform the procedural skill of extubating is necessary but not sufficient to accomplish patient-centered at-home terminal extubation. Terminal extubation at home requires a coordinated interdisciplinary team of heath care professionals to ensure the highest standard of end-of-life care. The process begins with the realization by a member of the health care team that the patient's quality of life and long-term prognosis are such that terminal extubation should be discussed as an option with the patient or health care proxy. The palliative care team is uniquely suited to initiate this conversation, but other members of the interdisciplinary health care team can fill this role as appropriate. If at-home terminal extubation is considered, the care team should engage with the EMS system to ensure their leadership and providers are capable—legally, physically, and ethically—of assisting in the process. We recommend waiting to broach the topic of EMS at-home extubation until the patient or family is at least considering terminal extubation and it has been confirmed that the EMS and health care system has the infrastructure necessary to operationalize the plan.

Preparing patients and loved ones for what to expect during the dying process is essential regardless of location though this is especially important if extubation is planned outside the controlled ICU environment. Ensuring that all parties are prepared and have common expectations is crucial before an out-of-hospital extubation is performed. This planning process is critical for preparing patients and loved ones for what is ahead.[8,9] The family should be helped to understand what to anticipate, including what their loved one will look like, the changes they will see, why each part of the procedure is happening, and the possible complications. Watching a loved one die can be one of the most emotionally taxing experiences of a person's life; by telling the family what will happen, the medical team can help lessen the fear and anxiety family members may be feeling.[9,17] Unprepared family members might misconstrue the body's natural response to the dying process as a sign of patient discomfort or distress. Family members who are not comfortable with withdrawing care and who are ill prepared could interfere with the procedure, seek reintubation, or simply add a level of stress to what should otherwise be a peaceful period for the family and patient, not to mention the caregivers. Many patients and their families also request spiritual care in the form of a chaplain or religious leader, the presence of which has been shown to reduce posttraumatic stress disorder for family members and help with coping before and after the family member has died.[4,12]

The local hospice program should be engaged to provide ongoing care and support following the procedure. Specialized equipment such as a hospital bed may contribute to the patient's comfort and the family's convenience at the end of life. We also recommend obtaining a suction unit from a medical supply rental company to leave at the home following the procedures. A hospice program or hospital social workers and care managers can arrange many of these logistics. Planning for out-of-hospital extubation is a complex task; however, with a significant number of patients preferring to die at home and the ability

to make those requests come to fruition, the choice is being given to many more patients allowing for compassionate patient-centered care at end of life.[4]

In this case, the patient was alert and capable of making her own heath care decisions. Terminal Extubation of Alert Patients (TEAP) requires additional considerations. The first is the awareness that the patient is making an appropriate decision in response to a failing body despite a functioning mind. The palliative care team must ensure this decision is not due to depression, delirium, or coercion. In this case, psychiatry was consulted to assist in making this determination. Next, appropriate symptom management must be considered. This should be part of the planning for all terminal extubations, but especially so for the alert patient. Finally, there should be an awareness that witnessing death after TEAP may cause stress for loved ones and health care providers beyond what would be expected after witnessing the death of an unconscious patient.[6,18]

If given the option, many families would opt to bring their loved one home to die.[19] Even if not chosen, simply having the option for TEAP may empower families at a time when they often feel them most helpless.[19] Those who do elect to bring their loved one home to die may receive even greater benefits as out-of-hospital terminal extubation gives the family more privacy and allows them to address their spiritual and emotional needs without being constrained in a hospital setting.[12,20] Some cultural or religious traditions at the time of death may be challenging to fully accommodate in a clinical setting, and these rituals are more appropriately executed in the privacy of one's home.[12] By being transported home to a nonmedical environment, the patient can also avoid many unnecessary medical procedures that may have been performed hospitalized but ultimately would not be beneficial.[4,9] Families of those who have died at home have described the experience as positive and immensely meaningful for all these reasons.[7] Facilitating death at home may also encourage an increased number of visitors, while also maintaining the family's privacy as a loved one is passing away.[9,12] Allowing a patient to die at home is an act of compassion that can be extremely meaningful to patients, family members, and the care team.[8,21]

EMS providers should not attempt to perform terminal extubation in isolation. However, we believe that EMS providers can play a critical role in an interdisciplinary team's effort to provide at-home terminal extubation for appropriate patients.

Conclusion

Guided by a comprehensive plan and logistical support from a team of hospice providers, a successful out-of-hospital terminal extubation is possible.[4] To truly achieve patient-centered care at end of life, the choice for an out-of-hospital death is necessary. Developing a process that allows paramedics to perform terminal extubation and palliative care interventions will simplify the logistics involved in performing terminal extubation in a patient's home. This will allow medical centers to readily offer patients the option of dying at home thus supporting compassionate patient-centered care at the end of life.

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