Pulmonary & Respiratory Medicine

Chiu, et al. J Pulm Respir Med 2015, 5:6
http://dx.doi.org/10.4172/2161-105X.1000310

Research Article Open Access

Palliative Care Consultation to Assist Discussion of Ventilator Withdrawal in a Medical Center in Taiwan

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Abstract

Objective: The decision to withdraw ventilator support for terminal patients is difficult for health professionals and patients' surrogates. Some intensive care unit physicians attempt to discuss the issue with surrogates. This retrospective study aimed to explore current dilemmas of ventilator withdrawal.

Methods: This is a retrospective review and analysis of medical records of terminal patients receiving ventilator support. The medical records of thirty-eight terminal patients who had received palliative care consultation for ventilator withdrawal at the National Cheng Kung University Hospital from August 2007 to January 2014 were reviewed retrospectively. Patients' characteristics, including age, gender, diagnosis, withdrawal medications for symptom relief, and period from withdrawal to death, were analyzed.

Results: Thirteen patients were withdrawn from ventilator support and seven were weaned successfully. Eight surrogates signed consents for ventilator withdrawal, but patients died before withdrawal. Patients median age at withdrawal was 75 years (range: 53~80 years), and 46% had terminal cancer. The median period from withdrawal to death was 1.17 hours (range: 0.1~80.92 hours). Withdrawal was performed by palliative care physicians (23%), and 77% of withdrawal was performed in the intensive care unit.

Conclusion: Family conference, good symptom control and psychosocial support are necessary for surrogates' ventilator withdrawal decisions. Encouraging more health care professionals to establish shared decision-making relationships could reduce the application of futile medical treatment.

Keywords: Palliative care consultation; Ventilator withdrawal; Terminal patients

Introduction

When aggressive treatment does not benefit critically ill patients, life-sustaining interventions will only prolong dying process. Regarding end-of-life care, many studies have discussed forgoing life sustaining treatments, including ventilator support, hemodialysis, blood transfusion, inotropic agents, antibiotic use…etc. [1-4]. Ventilator withdrawal is done most frequently in anticipation of death, [5] and it is affected by cultural factors, patient and family desires, physician beliefs, religious affiliation and legal factors [6,7]. Many life sustaining treatments are also discontinued during ventilator withdrawal, and ventilation is ceased last because of the probability that it will induce death immediately [8,9].

The two major reasons for ventilator withdrawal are the physician's perception that the patient does not want life support used and the physician's prediction that the patient's likelihood of survival in the intensive care unit is less than 10 percent [10]. Cooke et al. [11] demonstrated that the median time to death after withdrawal of ventilation was 0.93 hours in 1505 adult patients, and that the independent predictors of a shorter time to death included number of organ failures, vasopressors, intravenous fluids, and surgical versus medical service. In 2013, Huynh et al. [12] reported that median time to death was 0.9 hours in 159 patients. Fraction of inspired oxygen (FiO2) greater than 70% and a requirement for vasopressors were associated with shorter time to death.

The purpose of this study was to explore our experience with palliative care consultation in assisting ventilator withdrawal in terminal patients.

Materials and Methods

Patients

We performed a retrospective review of the medical charts of terminal patients who received palliative care consultation for ventilator withdrawal from the National Cheng Kung University Hospital (NCKUH, Tainan, Taiwan) from August 1, 2007 to January 31, 2014. A single palliative care physician collected all information. All terminal patients receiving palliative care consultation for ventilator withdrawal were included. Because the study did not involve personal contact, the institutional review board waived the need for informed consent from surrogates or family.

Premedications during withdrawal

Dr. Wei-Hsin Chiu designed the following withdrawal protocol.

1. Premedications are administered 24 hours before withdrawal, as follows:

- Fentanyl (0.5 mg/10 ml) infusion at current rate or 1 ampule

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Received May 28, 2015; **Accepted** December 30, 2015; **Published** December 31, 2015

Citation: Chiu WH, Su WC, Tsai JH, Chung WP, Jan KL, et al. (2015) Palliative Care Consultation to Assist Discussion of Ventilator Withdrawal in a Medical Center in Taiwan. J Pulm Respir Med 5: 310. doi: 10.4172/2161-105X.1000310

in N/S 40 ml run 2 ml/hr (0.02 mg/hr) and increase infusion rate by 25% (assuming patient is comfortable).

- Dormicum (15 mg/3 ml) infusion at current rate or 3 ampules in N/S 36 ml run 2 ml/hr (2 mg/hr) and increase infusion rate by 25% (assuming patient is comfortable).
- Dexamethasone (5 mg) 1 ampule iv q6h
- Buscopan (20 mg) 1 ampule iv q6h

2. Premedications administered 1 hour before withdrawal are as follows:

Fentanyl and dormicum, increase infusion rate by 25%-50% (assuming patient is comfortable).

3. Premedications are administered during withdrawal as follows:

We give an additional bolus of 50-100% of the hourly infusion rate every 10 minutes for dyspnea, irritable behavior, stridor or death rattles.

Statistical analysis

The values are given as the median ± standard deviation (SD). Group comparisons are made using Student's two-tailed unpaired t test. Statistical significance was set at $p<0.05$. All statistical analysis was performed using the statistical software, SPSS version 18.0 (SPSS, Chicago, IL, USA).

Results

Patient characteristics

The records of thirty-eight terminal patients with palliative care consultation for ventilator withdrawal were reviewed retrospectively. Thirteen patients accepted ventilator withdrawn and passed away peacefully. Seven patients prolonged life after successful weaning. Eight patients died before withdrawal. Ten patients were consulted for ventilator withdrawal, but their family did not want to receive withdrawal after family conference. No significant differences were demonstrated between withdrawal groups regarding patient death before ventilator withdrawal (Tables 1 and 2).

Withdrawal group

Median age of patients with ventilator withdrawal was 75 years (range: 53~80 years). Among these, 46% had terminal cancer, and 53.8% were male. Regarding complications, 92.3% had pneumonia, 84.6% were noted to have gastrointestinal bleeding, 92.3% received antibiotics, and 46.1% received blood transfusion. In addition, 76.9% of patients had used inotropic agents, 7.7% used dobutamine, and 76.9% used proton pump inhibitors. In terms of organ failure, 30.8% had jaundice related to liver failure, 23.1% had congestive heart failure and 69.2% had renal failure. Among patients receiving hemodialysis, 38.5% were withdrawn. For withdrawal medications, 100%, 84.6%, 84.6%, and 92.3% patients were given fentanyl, dormicum, buscopan, and steroids, respectively. Withdrawal was performed by palliative care physicians (23%) and critical care physicians (77%).

Death before withdrawal group

Median age of patients who died before ventilator withdrawal was 72 years (range: 38~89 years), and of these, 50% had terminal cancer and 75% were male. Regarding complications, all patients had pneumonia and 75% were noted to have gastrointestinal bleeding. All patients had received antibiotics, and 62.5% had received blood transfusion. In addition, 87.5% patients had used inotropic agents, no patients had used dobutamine, and 62.5% had used proton pump inhibitors. In terms of organ failure, 50% of patient had jaundice, 12.5% had congestive heart failure and 100% had renal failure. Among hemodialysis patients, 25% were withdrawn. For withdrawal medications, 75% and 62.5% of patients were given fentanyl and dormicum, respectively.

Characteristics	Withdrawal group	Death before withdrawal group	P level
Number	13	8	
Median age	75	72	0.117
Gender			0.357
Male	7 (53.8%)	6 (75%)	
Female	6 (46.2%)	2 (25%)	
Median age (years &range)	75 (53-80)	72 (38-89)	0.117
Cancer	6 (46%)	4 (50%)	0.872
Withdrawal location		No withdrawal	
ICU	10 (76.9%)		
Hospice ward	3 (23.1%)		
Pneumonia	12 (92.3%)	8 (100%)	0.447
Gastrointestinal bleeding	11 (84.6%)	6 (75%)	0.608
Acute renal failure	9 (69.2%)	8 (100%)	0.089
Jaundice	4 (30.8%)	4 (50%)	0.404
Congestive heart failure	3 (23.1%)	1 (12.5%)	0.572
Withdrawal of hemodialysis	5 (38.5%)	2 (25%)	0.549

Table 1: Patients' characteristics between ventilator withdrawal and death before withdrawal groups.

ICU: intensive care unit.

Palliative care consultation for ventilator withdrawal

The median period from withdrawal to death was 1.17 hours (range: 0.1~80.92 hours), and 77% of withdrawals were performed in ICU. The median period from admission to palliative care consultation was 7 days (range: 2~51 days). Both the median period from consultation to withdrawal and from family conference to withdrawal were 4 days (range: 1~50 days). The median period from admission to withdrawal and from admission to death were 14 and 15 days, respectively (range: 2~84 days) (Table 3).

Discussion

To our knowledge, this is the first study to focus on palliative care consultation for ventilator withdrawal in Taiwan. We compared the differences between a ventilator withdrawal group and a death before withdrawal group. However, no significant differences were found in patient characteristics and medications between the two groups. The major reasons for patients dying before ventilator withdrawal included that family members tried to make an unfulfilled wish come true; family set the auspicious date for withdrawal; family chose the time for reunion; family members did not reach a common consensus; family was reluctant to give up; family did not want to withdraw earlier even with their relative's downhill progression of disease; and, the patient died before the ventilator withdrawal was scheduled.

Most published studies have demonstrated that ventilators were withdrawn by critical care physicians in ICU, [10,12] but we pioneered to perform ventilator withdrawal by palliative care physicians in the hospice ward. During the period of palliative consultation, palliative care specialists would discuss the location of withdrawal with the patient's loved ones. Family members could choose the ICU or hospice ward depending on their personal, religious or ritual needs. Most family members hoped to receive ventilator withdrawal in ICU because they would be relieved with the use of monitors. Others chose

Treatment	Withdrawal group	Death before withdrawal group	P level
Withdrawal medications			
Fentanyl use	13 (100%)	6 (75%)	0.062
Dormicum use	11 (84.6%)	5 (62.5%)	0.270
Buscopan use	11 (84.6%)		
Steroid use	12 (92.3%)		
Dexamethasone use	9/12 (75%)		
Antibiotic use	12 (92.3%)	8 (100%)	0.447
Levophed or dopamine use	10 (76.9%)	7 (87.5%)	0.221
Dobutamine use	1 (7.7%)	0 (0%)	0.447
Proton pump inhibitors	10 (76.9%)	5 (62.5%)	0.502
Blood transfusion	6 (46.1%)	5 (62.5%)	0.491

Table 2: Medications administered between ventilator withdrawal and death before withdrawal groups.

Treatment	Withdrawal group	Death before withdrawal group	P level
Withdrawal medications			
Fentanyl use	13 (100%)	6 (75%)	0.062
Dormicum use	11 (84.6%)	5 (62.5%)	0.270
Buscopan use	11 (84.6%)		
Steroid use	12 (92.3%)		
Dexamethasone use	9/12 (75%)		
Antibiotic use	12 (92.3%)	8 (100%)	0.447
Levophed or dopamine use	10 (76.9%)	7 (87.5%)	0.221
Dobutamine use	1 (7.7%)	0 (0%)	0.447
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Blood transfusion	6 (46.1%)	5 (62.5%)	0.491

Table 3: Duration between admission, family conference, ventilator withdrawal and death.

the hospice ward because the palliative care team would support them and the environment felt more like home. We made a checklist and a novel educational video to provide withdrawal training for critical care physicians in Taiwan.

Opioids, steroids, and dormicum were the most frequently mentioned in ventilator withdrawal guidelines [13-15]. We offered medications suggestions as a protocol for critical care physicians, so the withdrawal medications were prescribed for 84%-100% of patients. We gave dexamethasone to prevent post-extubation laryngeal edema and recommended buscopan to decrease noisy respiratory secretions. Dyspnea was relieved by fentanyl and dormicum, and for comfort care, we prescribed pre-withdrawal medications earlier than in previous studies [16]. In our medical records, dyspnea, agitation, and respiratory secretions were most frequently observed by nurses, which was similar in previous study reports [17].

The present study showed that 38.5% of patients die within 1 hour and 77% die within the first 24 hours after ventilator withdrawal. The median period from withdrawal to death was a little longer than in previous reports [11,12]. No significant correlation was found between shortened time to death and related variables such as renal insufficiency, jaundice, gastrointestinal bleeding, inotropic agents, and proton pump inhibitors (data not shown), and it might be limited to our patient number. Unlike previous study reports, no significant differences were found in the percentage of hemodialysis withdrawal between the ventilator withdrawal group and the death before withdrawal group [10].

Uncertainty in the long-term prognosis of younger patients may delay withdrawal until the outcome of death is more certain and immediate [9]. No significant differences in median age were found between the ventilator withdrawal group and the death before withdrawal group. The median period from admission to palliative care consultation was 7 days in our study because critical care physicians need a period of time in which to evaluate patients' illness and perform aggressive treatment. Results of this study suggest that patients undergoing ventilator withdrawal can receive better terminal care with consultation and combined care from palliative care specialists. Palliative care recommendations and education should also be provided in critical care residency training programs in the future.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgements

We thank the National Cheng Kung University Hospital and College of Medicine, National Cheng Kung University, Tainan, Taiwan, for providing services that include training, technical support, and assistance with study design and data analysis.

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