

Maximal Medical Therapy and Palliative Care Can Work Together: When Are Advanced Care Measures Appropriate?

The approach to clinical conundrums by an expert clinician is revealed through presentation of an actual patient's case in an approach typical of morning report. Similar to patient care, sequential pieces of information are provided to the clinician who is unfamiliar with the case. The focus is on the thought processes of both the clinical team caring for the patient and the discussant.

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Resuscitation status and patient wishes in terms of advanced cardiopulmonary support must be addressed during inpatient hospital admissions. However, the lack of clarity of the patients' wishes and the variability in physicians' comfort addressing these issues often leads to ambiguity in an emergency setting. This may result in inappropriately aggressive management, and conversely, it may also lead to withholding potentially lifesaving therapy due to "Do Not Resuscitate" (DNR) designation. We report a case of hemodynamic instability due to acute supraventricular tachycardia (SVT) in a patient with a DNR designation. He was successfully treated according to the advanced cardiac life support (ACLS) protocol for SVT. We also discuss some of the ethical challenges of providing potential life-sustaining interventions in palliative medicine, as well as the dilemma of whether or not to provide such interventions to patients who have DNR status.

Case Presentation

A 45-year-old man with advanced tonsillar cancer was admitted to an inpatient palliative care unit for evaluation and treatment of anorexia, progressive pain, and asthenia. He had undergone tumor debulking and neck dissection followed by adjuvant chemotherapy and external beam radiation therapy. Despite maximal therapy, the patient developed locally recurrent disease (leading to more surgery) and later, progressive metastatic disease (treated with palliative radiation therapy). With ongoing weight loss and failure to thrive, a percutaneous gastrostomy tube was placed for nutritional support. Still, the patient suffered from significant stomatitis, esophagitis, and diarrhea consistent with radiation-induced injury, and had several admissions for dehydration and pain control.

During this and prior admissions, the patient clearly articulated his preference for DNR status. The patient was clinically declining, but was still functional, with an estimated survival of weeks to a few months. As with previous admissions, he was given intravenous fluids and parenteral opioids, and his electrolytes and vital signs normalized to his baseline. On the day of anticipated discharge, the patient was at his hemodynamic baseline (pulse of 100 beats per minute, blood pressure of 98/60 mmHg). Upon

returning to bed after a shower, the patient developed acute dyspnea, weakness, and diaphoresis. Heart rate was 170 beats per minute and blood pressure was 70/50 mmHg. Intravenous normal saline boluses were given while electrocardiogram (EKG) was obtained. EKG revealed SVT with changes suggestive of demand myocardial ischemia. Carotid massage and Valsalva maneuvers were unsuccessful in converting the rhythm to sinus.

At that point, consideration was given to his DNR designation. The treating physician and patient briefly discussed the alternatives of no treatment of his arrhythmia, or alternatively, more aggressive treatment options on the Palliative Care Unit, including intravenous (IV) adenosine and direct current cardioversion. He did not have a detailed advanced directive discussing similar scenarios; he had only completed a commonly-used, state-issued "Durable DNR" form. All decided the SVT was potentially reversible and appeared to be causing many of the patient's acute symptoms; hence, aggressive treatment of the arrhythmia was in his best interest.

Despite absence of telemetry monitoring, consideration was given to IV diltiazem or metoprolol, either of which could precipitate worsening hypotension. However, the goals were to restore his previous rhythm, to relieve symptoms with a minimum of side effects and unintended effects, and to avoid intensive care unit (ICU) transfer. Intravenous adenosine and esmolol were also considered, given their shorter half-life, potentially lower side effect profile, and ability to produce relief of the patient's distress without further complication. The pros and cons of the situation were discussed with the patient. While he desperately wanted to feel better, he wished to stay with his family where he was. He consented to a trial of adenosine, and agreed to remain on the Palliative Care Unit. The therapeutic plan was a trial of IV adenosine, and then metoprolol if necessary. He was assured that if this was unsuccessful, we would do all we could to keep him comfortable without ICU transfer. While the patient was monitored with a portable 12-lead EKG machine, the Palliative Medicine fellow administered adenosine 6 mg IV. Predictably, the patient noted flushing, a sense of impending doom, and a short

pause of asystole. This was followed by electrocardiographic conversion to sinus tachycardia at a rate of 100 beats per minute and hemodynamic and symptomatic improvement. The patient noted that his dyspnea and generalized sense of "not feeling well" resolved, and he was monitored for about 30 minutes without return of the SVT. The remainder of his hospitalization was uneventful, and he was discharged to home hospice the following day. He survived for another 3 weeks without return of symptoms of arrhythmia.

Discussion

Patient preferences in terms of advanced cardiopulmonary support must be addressed during hospital admission. This is in accord with recommendations from the Patient Self-Determination Act of 1990, as well as the Joint Commission on Accreditation of Healthcare Organizations.¹ Nevertheless, the number of U.S. adults with completed advance directives to guide care providers and families with preferences if personally unable to articulate them is estimated at 5% to 25%.² Clearly-documented wishes are particularly important in patients with advanced cancer; however, early studies show that this happens as little as 27% of the time³ in seriously ill cancer patients. In fact, oncology physicians report direct discussions about death with only 37% of their dying patients⁴ and cancer patients are found to have discussions at far lower rates than patients with amyotrophic lateral sclerosis despite worse survival.⁵

Cardiopulmonary resuscitation (CPR) and the advanced cardiac life support (ACLS) algorithms were established to treat life-threatening arrhythmias (namely ventricular tachycardia/fibrillation) in otherwise healthy patients who experienced witnessed intraoperative arrest. Original reports of closed chest compressions were in the intraoperative or perioperative setting.⁶ However, benefits of rapid initiation of CPR in witnessed out-of-hospital cardiac arrest were later noted as providing the only reasonable hope for reduced mortality and improved neurologic outcomes.^{7,8}

While CPR has shown this marginal but significant difference in outcomes of witnessed out-of-hospital cardiac arrest, patient with advanced life-limiting or life threatening illness tend to have even worse outcomes even if cardiac arrest is witnessed. Survival of all cardiac arrest patients to discharge has been estimated at 3% to 14% if cardiac arrest occurs outside of the hospital and 10% to 20% for witnessed, in-hospital cardiac arrest.⁹⁻¹² However, a recent meta-analysis of resuscitation for cancer patients estimates overall survival to discharge at 6.2%, and less when factoring in metastatic disease (5.6%), or ICU care at time of arrest (2.2%).¹³

Multiple reasons have been cited regarding why patients choose to forego resuscitation or proceed with full resuscitation status despite advanced life-threatening illness. Factors associated with refusal of CPR include being older, female, living in a nursing home and having a worsening functional status, depression, and/or an expected poor outcome.^{14,15} One can speculate that fear of no longer being cared for or being abandoned may be inferred or directly stated, and

this may or may not be related to socioeconomic factors, stressors outside of the medical system, or underlying depressive symptomatology, especially hopelessness. Alternatively, 1 study revealed that an unclear expectation of outcome and prognosis after cardiopulmonary arrest led some to proceed with full resuscitative measures.¹⁵

Reports differ regarding the advanced care trajectory based on patient wishes. One study of 872 critically ill cancer patients found no significant difference in application of life-sustaining therapies regardless of presence of an advance directive.³ The SUPPORT study mentioned above was specifically designed to understand preferences for CPR.¹⁴ While SUPPORT found that foregoing CPR may be associated with a small reduction in intensity of care, there was no difference in overall hospital survival.¹⁴ Last, although advance directives are static in terms of patient's stated wishes, a patient with decision-making capacity is able to request a shift in goals of care at any time. However, a case-based survey of 241 responding physicians concluded that a DNR order may indeed be associated with less aggressive and/or life-prolonging interventions, CPR notwithstanding.¹⁶ This concept of treating those with DNR status less aggressively is often born out in terms of popular perception.¹⁷ A recent study has demonstrated that patients who discuss these issues with physicians and elect a DNR status not only have fewer aggressive interventions, but also report a higher quality of life.⁴

A particular nidus for this confusion may be how one interprets the DNR directive. Although DNR is specifically associated with 3 basic tenets (no endotracheal intubation, no chest compressions, and no defibrillation in the setting of cardiopulmonary arrest), this designation does not substitute for intact patient decision-making capacity in considering other supportive measures. Intermediate steps such as "limited aggressive therapy" orders have been suggested to provide time-limited and goal-limited advanced care.⁹ While this offers a broader array of scenarios to be considered prior to and during clinical encounters, this may also muddy the picture with impractical options and further lack of clarity in already complex situations. The Physician Orders for Life-Sustaining Treatment (POLST) movement has taken roots in several states, targeting seriously ill patients such as the frail and elderly. The POLST provides more explicit information regarding limited advanced measures such as nutrition or antibiotics, and may be particularly useful as a prehospital decision aid.¹⁸ While the POLST, just as the traditional advance directive, may provide clinical guidance outside of situations described explicitly therein, it may not provide further information about goals of care, (ie, Is there a situation when 1 of these measures may be acceptable?). To reiterate what was stated about traditional directives, the POLST also applies only in situations where a patient is lacking decision-making capacity at the time of an acute event.

The designation of DNR may indeed allow for introduction of advanced care measures that may be in accord with the patient's overall wishes and clinical prognosis. Several

interventions may be appropriate on a time-limited basis. In addition to administration of adenosine or antiarrhythmics, as in the case of our patient, the use of broad-spectrum antimicrobial therapy, vasoactive medications, and consideration for intensive monitoring may all be appropriate on a time-limited basis. Nevertheless, without a clear understanding of the goals of limited aggressive therapy, some would argue there is always a "slippery slope" in terms of technology and the implementation of advanced care measures. Hence, expectations regarding perceived outcomes, goals to be achieved by the therapy, and reasonable time lines may further clarify the patient's wishes.

In this patient scenario, the administration of adenosine is generally safe, but may lead to prolonged asystole, atrial fibrillation, and ventricular tachyarrhythmias.^{19–21} This may lead one to consider further downstream ACLS interventions, including defibrillation or atropine. From an ethical standpoint, it is valuable to consider what would have been the next step beyond this step, in terms of advanced care measures. In the case of our patient, these measures were considered, and all accepted the goals of our intervention and its limitations. While virtually all treatments provided by physicians may predispose patients to iatrogenesis, the risks and benefits of interventions are particularly important considerations in the seriously ill patient with limited life expectancy.

Iatrogenic adverse events can be serious and fatal, and occur in 4% to 9% of hospitalized patients.^{22–24} There has been much debate about what to do for iatrogenic adverse events, particularly when patients have clearly articulated advanced directives and DNR requests. While some argue there is a higher moral duty to reverse complications resulting from physician error or treatment-induced complication, others would feel that the fiduciary obligation is to the patient's request.^{25,26} Again, in the setting of our clinical scenario, having clear, up-front expectations about goals of care and limitation inherent were articulated as much as able.

With increasing complexity of inpatient care and team-based models of care becoming the norm, discerning patient's wishes continuously throughout a hospital course is critical. While this responsibility previously would have fallen to the 1 coordinating clinician (ie, the primary care physician, or the patient's subspecialist), it is increasingly becoming the responsibility of all members of the team. While provider's level of prior education, exposure, and comfort may vary, several resources have attempted to address these concerns and attempted to lay a framework for overcoming barriers to these discussion and tips on empathetic and effective communication.^{17,27–29}

Skills notwithstanding, hospitalists particularly face a challenge in communicating these tenuous issues with patients. While there is intrinsic value in having a standardized approach to these situations, hospitalists are often thrown into these difficult situations in a fragmented, non-longitudinal fashion, further heightening the clinical and ethical tension.^{28,30} However, hospitalists are also in an area where they can truly make an impact in these patients' lives at a critical juncture. Evidence suggests that regardless of

the provider who broaches the subject, patients have a desire to talk about these issues.^{4,14} Hospitalists may be in an advantageous position compared to their primary care or subspecialist colleagues, in that they can offer a fresh perspective and the ability to have a dialog with the patient about these issues.

Implications

While patients are entitled to die free from the intrusion of chest compression and endotracheal tubes, they are also entitled to have symptoms aggressively managed. Advanced care measures may be appropriate for symptom palliation in complex clinical situations. A careful understanding of the patient's wishes and goals of care, after thoughtful exploration, may include therapies that in isolation, appear to be extraordinary or excessive. SVT is often quickly and successfully treated at the bedside. Despite a firm DNR status, treatment with IV adenosine allowed our patient time to return home with his family.

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References

- 2006 Comprehensive Accreditation Manual for Hospitals: The Official Handbook (CAMH). Oak Brook Terrace, IL: Joint Commission Resources; 2006.
- Kemp KR, Emmons E, Hayes J. Advance directives and do-not-resuscitate orders on general medical wards versus the intensive care unit. *Mil Med.* 2004;169:433–436.
- Kish SK, Martin CG, Price KJ. Advance directives in critically ill cancer patients. *Crit Care Nurs Clin North Am.* 2000;12:373–383.
- Wright AA, Zhang B, Ray A, et al. Associations between end-of-life discussions, patient mental health, medical care near death, and caregiver bereavement adjustment. *JAMA.* 2008;300:1665–1673.
- Astrow AB, Sood JR, Nolan MT, et al. Decision-making in patients with advanced cancer compared with amyotrophic lateral sclerosis. *J Med Ethics.* 2008;34:664–668.
- Kouwenhoven WB, Jude JR, Knickerbocker GG. Closed-chest cardiac massage. *JAMA.* 1960;173:1064–1067.
- Stiell IG, Wells GA, DeMaio VJ, et al. Modifiable factors associated with improved cardiac arrest survival in a multicenter basic life support/defibrillation system: OPALS Study Phase I results. Ontario prehospital advanced life support. *Ann Emerg Med.* 1999;33:44–50.
- Herlitz J, Ekstrom L, Wennerblom B, et al. Effect of bystander initiated cardiopulmonary resuscitation on ventricular fibrillation and survival after witnessed cardiac arrest outside hospital. *Br Heart J.* 1994;72:408–412.
- Choudhry NK, Choudhry S, Singer PA. CPR for patients labeled DNR: the role of the limited aggressive therapy order. *Ann Intern Med.* 2003;138:65–68.
- Gueugniaud PY, Mols P, Goldstein P, et al. A comparison of repeated high doses and repeated standard doses of epinephrine for cardiac arrest outside the hospital. European Epinephrine Study Group. *N Engl J Med.* 1998;339:1595–1601.

11. Longstreth WT Jr, Cobb LA, Fahrenbruch CE, Copass MK. Does age affect outcomes of out-of-hospital cardiopulmonary resuscitation? *JAMA*. 1990;264:2109–2110.
12. Plaisance P, Lurie KG, Vicaut E, et al. A comparison of standard cardiopulmonary resuscitation and active compression-decompression resuscitation for out-of-hospital cardiac arrest. French Active Compression-Decompression Cardiopulmonary Resuscitation Study Group. *N Engl J Med*. 1999;341:569–575.
13. Reisfield GM, Wallace SK, Munsell MF, Webb FJ, Alvarez ER, Wilson GR. Survival in cancer patients undergoing in-hospital cardiopulmonary resuscitation: a meta-analysis. *Resuscitation*. 2006;71:152–160.
14. Phillips RS, Wenger NS, Teno J, et al. Choices of seriously ill patients about cardiopulmonary resuscitation: correlates and outcomes. SUPPORT Investigators. Study to understand prognoses and preferences for outcomes and risks of treatments. *Am J Med*. 1996;128–137.
15. Pearlman RA, Cain KC, Starks H, Cole WG, Uhlmann RF, Patrick DL. Preferences for life-sustaining treatments in advance care planning and surrogate decision making. *J Palliat Med*. 2000;3(1):37–48.
16. Beach MC, Morrison RS. The effect of do-not-resuscitate orders on physician-making. *J Am Geriatr Soc*. 2002;50:2057–2061.
17. O'shea EM, Penson RT, Stern TA, et al. A staff dialogue on do not resuscitate orders: psychosocial issues faced by patients, their families, and caregivers. *Oncologist*. 1999;4:256–262.
18. Hickman SE, Hammes BJ, Moss AH, Tolle SW. Hope for the future: achieving the original intent of advance directives. *Hastings Cent Rep*. 2005;12S:S26–S30.
19. Romer M, Candinas R. Adenosine-induced non-sustained polymorphic ventricular tachycardia. *Eur Heart J*. 1994;15:281–282.
20. Tan HL, Spekhorst HH, Peters RJ, Wilde AA. Adenosine induced ventricular arrhythmias in the emergency room. *Pacing Clin Electrophysiol*. 2001;24:450–455.
21. Wesley RC Jr, Turnquest P. Torsades de pointes after intravenous adenosine in the presence of prolonged QT syndrome. *Am Heart J*. 1992;123:794–796.
22. Brennan TA, Leape LL, Laird NM, et al. Incidence of adverse events and negligence in hospitalized patients—results of the Harvard Medical Practice Study I. *N Engl J Med*. 1991;324:370–376.
23. Schimmel E. The hazards of hospitalization. *Ann Intern Med*. 1964;60:100–110.
24. Steel K, Gertman PM, Crescenzi C, Anderson J. Iatrogenic illness on a general medical service at a university hospital. *N Engl J Med*. 1981;304:638–642.
25. Casarett D, Ross L. Overriding a patient's refusal of treatment after an iatrogenic complication. *N Engl J Med*. 1997;336:1908–1910.
26. Casarett DJ, Stocking CB, Siegler M. Would physicians override a do-not-resuscitate order when a cardiac arrest is iatrogenic? *J Gen Intern Med*. 1999;14:35–38.
27. Chittenden EH, Clark ST, Pantilat SZ. Discussing resuscitation preferences with patients: challenges and rewards. *J Hosp Med*. 2006;1:231–240.
28. Weissman DE. Decision making at a time of crisis near the end of life. *JAMA*. 2004;292:1738–1743.
29. Emanuel LL, Danis M, Pearlman RA, Singer PA. Advance care planning as a process: structuring the discussions in practice. *J Am Geriatr Soc*. 1995;43:440–446.
30. Edwards DB. Addressing end-of-life issues. *JAMA*. 2005;293:162.