

Do-Not-Resuscitate Orders and Palliative Care in Patients Who Die in Cardiology Departments. What Can Be Improved?

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The use of do-not-resuscitate orders and palliative care was studied in 198 consecutive deaths of patients with heart disease that occurred in our department. In 113 (57%), it was decided not to resuscitate. The decision took into account the patient's medical history in 102 patients (90.3%) and departmental medical charts in 74 (65.5%). In total, 5 patients (4.4%) and 95 patients' families (84.1%) were informed. Little palliative treatment was used in patients with do-not-resuscitate orders: fifty-six (49.6%) received morphine and 5 (4.4%), spiritual support. However, prior to issuing the do-not-resuscitate order, these patients frequently received aggressive and expensive treatment such as orotracheal intubation in 49 (43.4%), coronary angiography in 27 (23.9%), inotropic drugs in 55 (48.7%), and intra-aortic balloon counterpulsation in 15 (13.3%). In conclusion, almost three-fifths of patients who died in a cardiology department had a do-not-resuscitate order. The decision to issue the order was frequently taken after administering aggressive treatment and little palliative care was provided afterward.

Key words: Resuscitation. Age. Death. Palliative care. Terminal.

Órdenes de no reanimar y cuidados paliativos en pacientes fallecidos en un servicio de cardiología. ¿Qué podemos mejorar?

Con el objetivo de evaluar el uso de órdenes de no reanimar y de cuidados paliativos en cardiopatas, registramos 198 muertes consecutivas en nuestro servicio. En 113 (57%) se decidió no reanimar, se reflejó en la historia clínica en 102 (90,3%) y en 74 (65,5%) en las hojas de enfermería. Se informó a 5 pacientes (4,4%) y a 95 familias (84,1%). El uso de medidas paliativas fue escaso en pacientes no reanimables, 56 (49,6%) recibieron cloruro mórfico y 5 (4,4%), asistencia espiritual. Sin embargo, previamente a la orden de no reanimar recibieron con frecuencia tratamientos agresivos y costosos como intubación orotraqueal, 49 (43,4%), coronariografía, 27 (23,9%), inotrópicos, 55 (48,7%) y balón intraaórtico de contrapulsación, 15 (13,3%). Concluimos que casi tres quintos de los pacientes que mueren en un servicio de cardiología no se consideran subsidiarios de reanimación, tomándose con frecuencia esa decisión tras realizar procedimientos agresivos, con una posterior infrautilización de medidas paliativas.

Palabras clave: Resucitación. Edad. Muerte. Cuidados paliativos. Terminal.

INTRODUCTION

Over half of all deaths in Spain occur in hospitals.¹ Do-not-resuscitate (DNR) orders are used with increasing frequency and most non-sudden deaths in Europe are preceded by such orders.² However, DNR orders and discussion of resuscitation are less

frequent in patients with cardiovascular disease than in patients with diseases such as cancer.³⁻⁵ Our goal was to evaluate the use of DNR orders and palliative care in cardiac patients. We hypothesized that there would be considerable room for improvement in implementing these orders.

METHODS

Data was obtained retrospectively from a registry of all deaths in the cardiology department of a tertiary hospital from January 2007 to February 2009. Data collected included:

– Demographic variables, cardiovascular risk factors (diabetes mellitus, hyperlipidemia, smoking,

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hypertension, obesity defined as a body mass index [BMI] >30), and antecedents included in medical records.

- Patient location and test results.
- Variables relating to the DNR order, including existence or absence of the order, whether included in the medical or nursing notes, and whether discussed or not with the patient or the patient's family. Date of order. Measures to limit therapeutic effort. Prior use of aggressive care.
- Use of palliative treatment: morphine chloride, spiritual care from the hospital chaplain or other means, disconnection of implantable cardioverter defibrillator.
- Autopsy: request to the family and performance.

In all cases, the decision not to resuscitate was taken individually by the attending physician. The study was approved by the hospital ethics committee.

Between-group comparisons were carried out using χ^2 or Fisher's exact test for categorical variables and Student t test for continuous variables. Analyses were performed in version 12 of SPSS (SPSS Inc., Chicago, Illinois, USA).

RESULTS

During the study period, 9587 patients were admitted to the unit and 198 (2%) died. Among those who died, resuscitation was ruled out in 113 (57%); these patients tended to be older, with more co-morbidities, a higher percentage of admissions due to heart failure, and longer duration of stay in the unit. They were also less frequently admitted to the coronary care unit (Table 1).

The following data refer to the 113 patients in which the decision not to resuscitate was recorded in writing. In 3 patients, the DNR order was given within 24 hours of admission. The median number of days from admission until the order was 7 (interquartile range, 3-21.3 days). In most cases, the decision not to resuscitate was based on several factors, though these frequently included older age, co-morbidity, and the presence of heart disease. The principal factors involved in the decision are shown in Figure 1.

The DNR order was recorded in the patient's medical record in 102 (90.3%) cases and in the nursing notes in 74 (65.5%) cases. A note was made to inform patients of the DNR order in 5 (4.4%) cases and to inform the family in 95 (84.1%) cases. As well as the DNR order, therapeutic efforts were explicitly limited in the 24 h preceding death in 39 (34.5%) patients, as shown in Figure 2. Palliative treatment was used infrequently in DNR patients and many had received aggressive and expensive treatments prior to the DNR order (Table 2). An

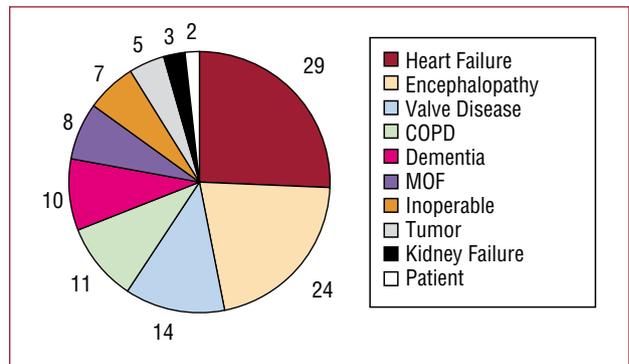


Figure 1. Main reason patient considered not revivable in 113 consecutive cases. COPD, chronic obstructive pulmonary disease; Dementia, cognitive deterioration; Encephalopathy, severe encephalopathy or electroencephalogram with poor prognosis; Heart failure, severe heart failure or cardiogenic shock; Inoperable, non-valvular surgical conditions inoperable due to high risk; MOF, multiple organ failure; Patient, patient's wishes; Tumor, advanced tumor; Valve disease, inoperable severe valve disease.

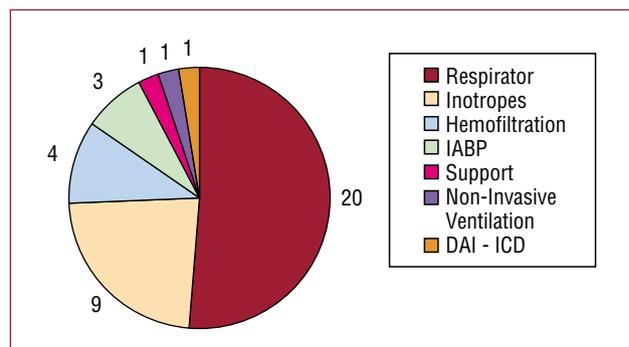


Figure 2. Measures withdrawn to limit therapeutic efforts during the 24 hours prior to death in 39 patients. Hemofiltration, withdrawal of continuous venous hemofiltration; IABP, withdrawal of intra-aortic balloon pump; ICD, disconnection of implantable cardioverter defibrillator; Inotropes, withdrawal of inotropic perfusion; Non-invasive ventilation, withdrawal of non-invasive ventilation; Respirator, extubation and withdrawal of mechanical ventilation (2 with withdrawal of inotropes and 1 with withdrawal of IABP; Support, stopping previously implanted ventricular support.

advance directives document was not included in any of the patients' medical records.

DISCUSSION

Almost 3 out of 5 patients who died in our unit over the study period had a DNR order. In many cases the decision to apply a DNR order was taken only after a prolonged stay in the unit and the application of aggressive therapeutic measures. Only half of the patients assigned a DNR order received morphine chloride as a palliative measure, spiritual care was

TABLE 1. Clinical Characteristics of 198 Patients Who Died During Admission Based on Whether They Were Considered Revivable or Not

	Total (n=198)	Revivable (n=85)	Not revivable (n=113)	P
Age, mean (SD), y	76.3 (10.5)	73.9 (11.9)	78 (8.7)	.008
Women	93 (47)	41 (48.2)	52 (46)	.89
Cardiovascular risk factors	185 (93.4)	79 (92.9)	106 (93.8)	.91
High blood pressure	145 (73.2)	61 (71.8)	84 (74.3)	.31
Diabetes mellitus	76 (38.4)	25 (29.4)	51 (45.1)	.01
Smoking	64 (32.3)	33 (38.8)	31 (27.4)	.38
Dyslipidemia	74 (37.4)	35 (41.2)	39 (34.5)	.58
Obesity	21 (10.6)	11 (12.9)	10 (8.8)	.48
Prior heart disease	165 (83.3)	69 (81.2)	96 (85)	.42
Arrhythmias	73 (36.9)	26 (30.6)	47 (41.6)	.06
Ischemic	130 (66.7)	55 (64.7)	75 (66.4)	.18
Valvular	57 (28.8)	19 (22.4)	38 (33.6)	.07
ICD wearers	9 (4.5)	5 (5.9)	4 (3.5)	.68
Co-morbidity (Charlson index), mean (SD)	4.3 (4.2)	3.2 (3.1)	5 (4.4)	.04
COPD	33 (16.7)	11 (12.9)	22 (19.5)	.15
Kidney failure	64 (32.3)	29 (34.1)	35 (31)	.86
Peripheral vascular disease	30 (15.2)	13 (15.3)	17 (15)	.97
Stroke	28 (14.1)	11 (12.9)	17 (15)	.53
Dementia	20 (10.1)	6 (7.1)	14 (12.4)	.22
Tumor ^a	27 (13.6)	10 (11.8)	17 (15)	.49
Cause of admission				
Heart failure	64 (32.3)	20 (23.5)	44 (38.9)	.01
AMI	56 (28.3)	33 (38.8)	23 (20.4)	.02
Cardiac arrest	26 (13.1)	8 (9.4)	18 (15.9)	.10
Cardiogenic shock	13 (6.6)	9 (10.6)	4 (3.5)	.09
None of the former	39 (19.7)	15 (17.6)	24 (21.2)	
Scheduled admission ^b	12 (6.1)	3 (3.5)	9 (7.9)	
Arrhythmia	11 (5.6)	5 (5.9)	6 (5.3)	
Unstable angina	9 (4.5)	7 (8.2)	2 (1.8)	
Heart failure and pneumonia	3 (1.5)	1 (1.2)	2 (1.8)	
Others ^c	4 (2)	1 (1.2)	3 (2.7)	
Length of hospital stay, location, and autopsy				
Length of stay, mean (SD), d	9.2 (9.1)	4.6 (5.1)	9.9 (10.6)	<.001
Initially admitted to CCU	120 (60.6)	64 (75.3)	56 (49.6)	<.001
Autopsy requested	13 (6.6)	11 (12.9)	2 (1.8)	.12
Autopsy performed	7 (3.5)	5 (5.9)	2 (1.8)	.17

DAMI indicates acute myocardial infarction; CCU, coronary care unit; COPD, chronic obstructive pulmonary disease; ICD, implantable cardioverter defibrillator.

^aFour non-melanoma skin cancers, 14 active tumors, 9 in complete remission.

^bFor performance of invasive procedure.

^cDigestive hemorrhage secondary to antiplatelet treatment for acute coronary syndrome, aortic dissection, hip fracture complicated with heart failure, stroke complicated with AMI.

Data are n (%) or mean (standard deviation).

rare, and implantable cardioverter defibrillators were not disconnected in 3 of the 4 patients wearing the device, suggesting room for improvement in that area.

Most non-sudden deaths in Spain are preceded by DNR orders.² We observed that DNR patients had more co-morbidity and were older. In previous studies, the variable most frequently associated with these orders was age.⁶

In our series, few attempts were made to ascertain patient preferences and only 4% were informed of the

decision not to resuscitate. It has been reported that the decision is made without taking into account patient wishes in over two thirds of cases,⁶ despite the fact that in many cases patients should not be deprived of the possibility of resuscitation without prior discussion.⁶ In a study of cardiac arrest in 2505 octogenarians, Goodlin et al⁷ found clear discrepancies between the desire to receive resuscitation and attitudes towards resuscitation. In a quarter of patients with heart failure, physicians were found to have a misguided view of the patient's desire to be resuscitated.³ On the

TABLE 2. Aggressive and Palliative Treatments in 113 Patients Later Considered DNR and Who Died During Admission

	No. (%)
Aggressive therapy prior to the decision not to resuscitate	
Inotropes	55 (48.7)
Endotracheal intubation	49 (43.4)
Balloon pump	15 (13.3)
Reperfusion techniques	28 (24.8)
Scheduled PCI	16
Primary angioplasty	7
Fibrinolysis	5
Palliative treatment	
Palliative morphine chloride	56 (49.6)
Spiritual assistance	5 (4.4)
Disconnect ICD	1/4

ICD indicates implantable cardioverter defibrillator; PCI, percutaneous coronary intervention.

other hand, the decision-making capacity of patients with terminal heart disease can be affected by the advanced condition of the illness. Patients likewise sometimes do not want to be informed, do not want to have to decide, or may be very ambivalent.³ The decision to apply a DNR order was not previously agreed with the family in 16% of our series. Most patients and family members consider it essential to talk to the clinician regarding the patient's death and DNR orders,³ but this type of dialogue is difficult for physicians.⁶ The decision should also be disclosed in all clinical documents. In our series, it is striking that the decision to apply the DNR order did not appear in the nursing notes in 34% of cases. The final decision to resuscitate or not can frequently be taken in a question of seconds by a doctor on call, so it is imperative that DNR orders are reflected in the most easily accessible documentation, which would usually be the nursing notes.

With regard to the deficits we observed in palliative care, specialists in this type of care have been found to have little training in heart disease, and vice-versa.⁸ This lack of training contrasts with the widespread use of aggressive measures in patients later considered DNR during the same period of hospitalization. The fact that implantable cardioverter defibrillators were not disconnected in 3 of the 4 patients using the device is particularly noteworthy. After interviewing 100 relatives of patients who died with a defibrillator, Goldstein et al⁹ showed that the possibility of disconnection was only raised with 27, 21 of whom accepted disconnection.

In our study, therapeutic efforts were explicitly limited in 35% of patients. From an ethical point of

view, there is no great difference between not initiating life support treatment or withdrawing such measures once they have been implemented. However, for the clinician it is a more difficult decision to withdraw such measures than not to implement them.¹⁰ The problem is relevant, as the percentage of deaths preceded by limitation of therapeutic effort seems to be increasing.¹¹ This suggests a need for tools which will permit early detection of patients who will not benefit from aggressive management.

Finally, the very low rate of requests for and performance of autopsies observed here is a reflection of the decline in the number of autopsies performed in Spanish hospitals, a decline which has previously been described as alarming.¹²

Our study suffers from limitations inherent in retrospective data collection. Using previous diagnoses probably meant that dementia was under-diagnosed. Moreover, the number of patients analyzed limited our ability to draw definitive conclusions. Finally, as this was a single-center study it reflects management in only one hospital so we should be cautious about extrapolating the results to other centers.

In conclusion, resuscitation was not considered appropriate in 3 of every 5 patients who died in the cardiology unit studied. The decision to issue a DNR order was frequently taken after administering aggressive treatment and little palliative care was provided afterward.

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