



Case Report

Cooperation between Heart Failure Center of Hiroshima University Hospital and a regional medical facility: Option for an end-of-life heart failure patient receiving palliative care



Tomohiko Kisaka (MD, PhD)^{a,b}, Yoshiharu Sada (MD)^a, Natsumi Takeuchi (PT)^c,
Mariko Mizukawa (CNS)^b, Noboru Oda (MD, PhD)^a, Hiroaki Kimura (MD, PhD)^{b,c},
Yasuki Kihara (MD, PhD, FJCC)^{a,b,*}

^a Department of Cardiovascular Medicine, Hiroshima University Graduate School of Biomedical and Health Sciences, Japan

^b Heart Failure Center, Hiroshima University Hospital, Hiroshima, Japan

^c Department of Rehabilitation, Hiroshima University Graduate School of Biomedical and Health Sciences, Hiroshima, Japan

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ABSTRACT

A 64-year-old woman with recurrent mitral valve stenosis was hospitalized 30 years after open commissurotomy. Severe right cerebral embolism occurred at age 58, with left hemiparesis. She was debilitated with cardiac cachexia. Based on symptomatic valvular disease findings, surgery was considered, but deemed too high risk due to the combined insufficiencies. She refused this surgical operation and requested conservative therapy. Optimized medication and cardiac rehabilitation improved her general condition allowing transfer to another hospital. We explained the short life expectancy both to her and to her family. They decided to transfer to a hospice at a chronic care hospital and she was given best supportive care. Eventually, her urine output decreased and respiration deteriorated. She and her family refused resuscitation in the event of cardiopulmonary arrest, requesting only suffering reduction. Thus, continuous intravenous infusion of morphine was started. The optimized doses for pain alleviation were determined in consultation with palliative care specialists and maximized her consciousness level for the last four days.

“Heart-failure hospice” is potentially a place to die for end-of-life patients, attended by their families and healthcare providers. They need prognostic information and options for end-stage. Our experience confirms results about palliative care from previous studies conducted overseas demonstrating the effectiveness of opioids relieving end-stage symptoms.

<Learning objective: Perform an appropriate end-of-life assessment for patients with irreversible severe heart failure. Formulate appropriate plans for further evaluation and management, including referral and consultation to palliative care specialists when necessary. Develop an appropriate regional cooperation, with consideration given to the less common optional treatment for cardiac dysfunction, “heart-failure hospice.”>

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Introduction

Patients with chronic heart failure (CHF) are increasing in developed countries with aging populations [1]. Although advances in treatment have prolonged survival, CHF becomes terminal after repeated remissions and exacerbations. Patients and caregivers face challenging issues including quality of life and end-of-life

CHF management. Standardizing CHF treatment is difficult due to background diversity. Moreover, because determining whether CHF is end-stage is difficult for healthcare providers, clinical decisions about therapeutic aggressiveness are challenging. Thus, life-prolonging invasive intervention is often continued, despite end-stage CHF. One-year survival is reportedly $\leq 50\%$ in New York Heart Association (NYHA) class III/IV patients, a prognosis similar to that of stage IIIA lung cancer patients [2,3]. However, CHF patients and families often do not recognize this poor prognosis. Patients with little long-term survival potential should receive symptom-palliating treatment first, with hospice care with opioids for dyspnea among the options [4]. Patients and families need prognostic information and treatment options for end-stage CHF, with treatment decisions being made cooperatively.

* Corresponding author at: Department of Cardiovascular Medicine, Hiroshima University Graduate School of Biomedical and Health Sciences, 1-2-3 Kasumi, Minami-ku, Hiroshima 734-8551, Japan. Tel.: +81 82 257 1543; fax: +81 82 257 1569.

E-mail address: ykihara@hiroshima-u.ac.jp (Y. Kihara).

Estimated 70,000–100,000 CHF patients live in Hiroshima prefecture. The Heart Failure Center of Hiroshima University Hospital plays a central role in promoting a regional heart failure-following network system by multiple medical facilities. Herein, we report a patient with end-stage CHF, receiving optimized care at our hospital and transferred to hospice at a regional medical facility with consent.

Case report

A 64-year-old woman underwent open commissurotomy for mitral valve stenosis at age 34 years. Severe right cerebral embolism occurred at age 58, with left hemiparesis caused by large cerebral infarction (Fig. 1). Echocardiography revealed recurrent mitral valve stenosis, moderate aortic valve stenosis, severe secondary tricuspid valve regurgitation, and significant right heart dilatation. She refused reoperation, despite being a surgical candidate, and continued medical treatment at a nearby clinic.

Anorexia, emaciation (height 150 cm, weight 33 kg), and hepatomegaly developed in November 2011. By December, she was debilitated with cardiac cachexia and orthopnea. Compromised activity prompted admission to our hospital in February 2012 (Table 1). She had NYHA class III heart failure with impaired activities of daily living/quality of life status (Table 2), cardiomegaly (cardiothoracic ratio, 0.79), and increased pulmonary vessel shadows. Echocardiography revealed decreased left ventricular wall motion (left ventricular ejection fraction, 46%), severe aortic valve stenosis (aortic valve area, 0.9 cm²; maximum velocity, 4 m/s), and severe mitral valve stenosis (mitral valve area, 1.0 cm²) with secondary right heart failure (tricuspid pressure gradient, 41 mmHg) (Figs. 2 and 3). Based on symptomatic valvular disease findings at her age, surgery was considered, but deemed too high risk due to the combined valvular diseases. She and her family requested conservative treatment. Doses of diuretic agents were optimized, increasing urine output and ameliorating dyspnea. Cardiac rehabilitation with indoor walking was started despite paresis and rehabilitation for cerebral infarction was also performed to prevent contractures and improve dysarthria (Table 3).

In April 2012, her general condition improved, allowing transfer to another hospital. We explained the poor prognosis and short life expectancy to the patient and her family. They requested continuation of conservative therapy. The patient was thus referred for follow-up to a facility near her home. Transfer was scheduled to another chronic care facility following admission to a nearby general hospital. At the general hospital, she was favorably treated

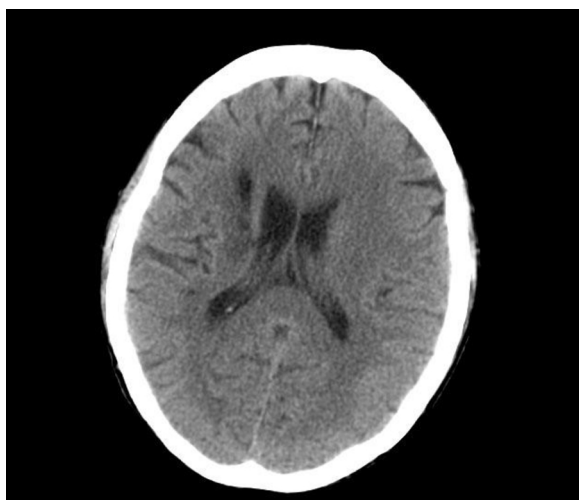


Fig. 1. Head computed tomography revealed cerebral infarction at onset.

Table 1
Laboratory data on admission.

<i>Peripheral blood</i>		Prothrombin time	42%
WBC	6180/ μ l	Uric acid	6.5 mg/dl
RBC	315×10^4 / μ l	Total cholesterol	154 mg/dl
Hemoglobin	6.7 g/dl	HDL cholesterol	55 mg/dl
Platelets	23.7×10^4 /dl	LDL cholesterol	96.0 mg/dl
<i>Biochemistry</i>		Triglyceride	73 mg/dl
AST	16 IU/L	<i>Urinalysis</i>	
ALT	24 IU/L	Protein	(–)
LDH	202 IU/L	Glucose	(–)
ALP	380 IU/L	Ketone body	(–)
γ -GTP	24 IU/L	Urobilinogen	Normal
Total bile acids	1.0 mg/dl	<i>Sediment</i>	
CPK	22 IU/L	RBC	1–4/HPF
Blood urea nitrogen	13.6 mg/dl	WBC	0/HPF
Creatinine	0.52 mg/dl	Casts	(–)
Total protein	7.0 g/dl	Relative density	1.005
Albumin	3.9 g/dl	pH	8.0
Sodium	125 mEq/L		
Potassium	4.1 mEq/L		
Chloride	87 mEq/L		
Fe	12 μ g/dl		
Ferritin	8.3 ng/ml		
NT-proBNP	1063 pg/ml		

WBC, white blood count; RBC, red blood count; AST, aspartate amino transferase; ALT, alanine amino transferase; LDH, lactate dehydrogenase; ALP, alkaline phosphatase; γ -GTP, γ -glutamyltransferase; CPK, creatine phosphokinase; Fe, iron; NT-proBNP, N-terminal pro-B-type natriuretic peptide; HDL, high density lipoprotein; LDL, low density lipoprotein; HPF, high power field; pH, potential of hydrogen.

for CHF and lumbago in May 2012. Urine output and edema were controlled with thiazide diuretics (Fig. 4). She was transferred to hospice at a chronic care hospital near her home in mid-June 2012. She was given a mildly salt-restricted, adjusted for edema, high-calorie and high-protein diet. She received appropriate supplements when anorexia worsened. In early July 2012, her respiratory state deteriorated after preceding oliguria. She and her family again refused resuscitation in the event of cardiopulmonary arrest, requesting only suffering reduction. Thus, palliative care with opioids was started: continuous intravenous infusion of morphine via a syringe pump was started. The optimized doses for pain alleviation were determined in consultation with a palliative care specialist (Fig. 5). Pain management maximized her consciousness

Table 2
Functional Independence Measure (FIM) score.

Self-care		Communication and psychosocial	
Eating	6	Expression	6
Grooming	2	Comprehension	6
Bathing/showering	2	Social interaction	5
Dressing upper body	2		
Dressing lower body	2		
Toileting	4		
Mobility		Cognition	
Transfers: bed/chair/wheelchair	4	Problem solving	5
Transfers: toilet	4	Memory	5
Transfers: bathtub/shower	2		
Locomotion: walking/wheelchair	4		
Locomotion: stairs	1		

Seven levels for each item.

Level description:

- 7 Complete independence, fully independent.
- 6 Modified independence, requiring the use of a device but no physical help.
- 5 Supervision, requiring only standby assistance or verbal prompting or help with set-up.
- 4 Minimal assistance, requiring incidental hands-on help only (subject performs >75% of the task).
- 3 Moderate assistance, subject still performs 50–75% of the task.
- 2 Maximal assistance, subject provides less than half of the effort (25–49%).
- 1 Total assistance, subject contributes <25% of the effort or is unable to do the task.

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