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Natural History and Prognostic Factors in Alcoholic Cardiomyopathy

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ABSTRACT

OBJECTIVES This study sought to determine the natural history of contemporary alcoholic cardiomyopathy (ACM), to compare it with that of idiopathic dilated cardiomyopathy (IDCM), and to identify risk factors for poor outcome.

BACKGROUND ACM is a common cause of dilated cardiomyopathy (DCM), but little is known about its natural history or the effect of reducing alcohol intake on disease progression.

METHODS We studied the clinical characteristics and outcomes of 94 consecutive patients with ACM and 188 with IDCM, evaluated over the period between 1993 and 2011.

RESULTS After a median follow-up of 59 months (interquartile range: 25 to 107 months), 14 ACM patients (15%) had died from cardiovascular causes (6 from heart failure and 8 from sudden cardiac death), 14 (15%) underwent heart transplantation, 35 (37%) experienced recovery in left ventricular function, and 31 (33%) remained clinically stable without improvement in systolic function. Transplantation-free survival was higher in ACM patients than in IDCM patients ($p = 0.002$), and ACM was associated with a favorable outcome on multiple analysis of the entire cohort (odds ratio [OR]: 0.4; 95% confidence interval [CI]: 0.2 to 0.8; $p = 0.01$). Independent predictors of death or heart transplantation in ACM identified by multiple logistic regression analysis were atrial fibrillation (OR: 9.7; 95% CI: 2.56 to 36.79; $p = 0.001$); QRS duration >120 ms (OR: 7.2; 95% CI: 2.02 to 26; $p = 0.002$), and lack of beta-blocker therapy (OR: 4.4; 95% CI: 1.35 to 14.49; $p = 0.014$). ACM patients who reduced their alcohol intake to moderate levels exhibited similar survival ($p = 0.22$) and cardiac function recovery ($p = 0.8$) as abstainers.

CONCLUSIONS ACM has a better prognosis than IDCM. Atrial fibrillation, QRS width >120 ms, and the absence of beta-blocker therapy identify patients with a poor outcome. Alcohol abstainers and those who reduce intake to a moderate degree show similar clinical outcomes. (J Am Coll Cardiol HF 2015;3:78–86) © 2015 by the American College of Cardiology Foundation.

Excessive alcohol intake is a major health problem in developed countries. Although light to moderate alcohol intake has been related to a reduction in the risk for coronary heart disease and heart failure (1-4) heavy alcohol consumption is associated with development of left ventricular dysfunction (5-7).

Excess alcohol consumption has been implicated in up to 40% of cases of dilated cardiomyopathy (DCM) (8-11). Similar to other causes of DCM, alcoholic cardiomyopathy (ACM) is characterized by a dilated left ventricle (LV), increased LV mass and a reduced LV ejection fraction (LVEF) (7), but the diagnosis is usually one of exclusion in a patient with a long history of heavy alcohol abuse, as no specific clinical or histological features have been identified (7-10). Very few studies have investigated the natural history of ACM (8-10,12), and all of those were conducted in the era before modern pharmacotherapy (8-12). Moreover, data derived from those studies are

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contradictory, with some showing a better prognosis in ACM than in IDCM (10), and others the reverse (8,9). Similarly, data on the beneficial effects of abstinence from alcohol are inconsistent (8-10,13).

The aims of present study were to define the long-term outcome of ACM in the current era, to compare it with that of idiopathic DCM, and to determine prognostic markers.

METHODS

From January 1993 to December 2011, we collected data from all consecutive ACM patients referred for evaluation to the Heart Failure and Heart Transplant Section of the Hospital Universitario Puerta de Hierro (Madrid, Spain). The study was approved by our institution's local review board and conformed to the principles of the Helsinki declaration.

IDCM was defined according to the World Health Organization criteria (14). Heavy alcohol consumption was defined as a self-reported history of alcohol intake of >80 g per day (8 standard drinks) over a period of at least 5 years (8-10). Alcohol abuse must have been maintained until <3 months before the diagnosis of DCM.

Although a specific and structured program for alcohol discontinuation was not provided, complete abstinence from alcohol was recommended to all ACM patients. During follow-up, patients were classified as abstainers if they reported complete discontinuation of alcohol consumption and as nonabstainers if they reported continued

TABLE 1 Clinical, Electrocardiographic, and Echocardiographic Characteristics at First Evaluation and Follow-Up Findings in Patients With ACM and IDCM

Characteristic	ACM (n = 94)	IDCM (n = 188)	p Value
Mean age, yrs	49.6 ± 10.0	49.9 ± 14.0	0.843
Mean age at start of heart failure symptoms, yrs	47 ± 10	47 ± 15	1.000
Duration of heart failure symptoms, yrs	2.6 ± 4.0	3 ± 4	0.040
Sex			<0.001
Male	99	74	
Female	1	26	
NYHA functional class			0.048
I	7	9	
II	26	40	
III	37	33	
IV	30	18	
Comorbidities			
Hypertension	36	33	0.658
Dyslipidemia	30	30	1.000
Diabetes	23	16	0.128
Smoking	50	16	<0.001
Body mass index, kg/m^2	28.3 ± 5.0	26.3 ± 5.0	0.015
Chronic obstructive pulmonary disease	31	13	<0.001
Liver disease	20	2	<0.001
Nephropathy	7	5	0.363
Blood test results			
Hemoglobin, g/dl	14.3 ± 1.0	14.0 ± 2.0	0.028
Creatinine, mg/dl	1.2 ± 0.3	1.2 ± 0.6	0.356
Bilirubin, mg/dl	1.9 ± 3.3	1.1 ± 1.2	0.074
ALAT, U/l	88 ± 229	32 ± 25	0.053
ASAT, U/l	88 ± 98	30 ± 25	0.038
Patients treated with			
Digoxin	48	43	0.454
Loop diuretics	76	80	0.478
Spironolactone or eplerenone	49	47	0.805
Beta-blockers	60	65	0.383
ACEI or ARB	90	85	0.083
Amiodarone	20	18	0.682
Implantable cardiac defibrillator	32	31	0.588
Cardiac resynchronization therapy	18	12	0.143

Continued in the next column

TABLE 1 Continued

Characteristic	ACM (n = 94)	IDCM (n = 188)	p Value
ECG test results			
Sinus rhythm, %	66	76	0.082
Atrial fibrillation, %	34	24	0.082
QRS >120 ms, %	37	46	0.177
QRS duration, ms	111 ± 29	111 ± 32	0.986
Left bundle branch block, %	34	33	0.929
Echocardiography results			
Left ventricular ejection fraction	26 ± 9	27 ± 8	0.277
Left ventricular end-diastolic diameter, mm	68 ± 9	67 ± 9	0.373
Exercise test results			
6-min test, m*	367 ± 74	361 ± 83	0.705
Peak oxygen uptake, l/kg/min†	15 ± 6	20 ± 15	0.162
Evolution			
Death or heart transplantation, %	33	48	0.017
Heart transplantation, %	15	35	<0.001
Death, %	18	13	0.287
Heart failure death, %	6	7	0.934
SCD, %	9	3	0.027
Other death, %	3	3	0.719

*Values are mean ± SD or %. 31 ACM patients (33%) and 101 IDCM patients (54%) underwent a 6-min walking test. †27 ACM patients (29%) and 100 IDCM patients (53%) underwent an exercise test with O_2 consumption.

ACM = alcoholic cardiomyopathy; ACEI = angiotensin-converting enzyme inhibitors; ALAT = alanine transaminase; ARB = angiotensin II receptor blockers; ASAT = aspartate transaminase; ECG = electrocardiography; IDCM = idiopathic dilated cardiomyopathy; SCD = sudden cardiac death.

ABBREVIATIONS AND ACRONYMS

ACEI = angiotensin-converting enzyme inhibitors

ACM = alcoholic cardiomyopathy

ARB = angiotensin II receptor blockers

CG = electrocardiogram

COPD = chronic obstructive pulmonary disease

CPHM = Cox proportional hazards model

DCM = dilated cardiomyopathy

IDCM = idiopathic dilated cardiomyopathy

IQR = interquartile range

LV = left ventricle

LVEF = left ventricular ejection fraction

NYHA = New York Heart Association

SCD = sudden cardiac death