OBSTETRICS

Poor outcome of indigent patients with peripartum cardiomyopathy in the United States

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OBJECTIVE: Peripartum cardiomyopathy (PPCM) patients from Haiti and South Africa have poor survival and poor left ventricular (LV) function recovery compared with patients from the United States. There are no reported studies of PPCM among the African American population in the United States. We evaluated the prognosis of PPCM in a mostly African American population.

STUDY DESIGN: We analyzed the clinical and echocardiographic data of 44 (39 African American) patients with PPCM over an 11 year period (1992-2003).

RESULTS: Thirty-nine patients were indigent and 5 had health insurance. During a mean follow-up of 24.0 (range, 0.1-264) months, 7 (15.9%) patients died and LV function returned to normal in 14 (35%).

CONCLUSION: LV function recovery and survival rates of PPCM patients observed in our study are similar to those reported from Haiti and South Africa and different from what is generally accepted in the United States.

Key words: mortality, peripartum cardiomyopathy, racial difference

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Peripartum Cardiomyopathy (PPCM) is a disorder characterized by left ventricular (LV) dysfunction and heart failure.[1] The reported incidence, recovery, and prognosis of PPCM vary in different parts of the world, suggesting a geographical and ethnic disparity.[2-5] Studies of PPCM from the United States consisting mostly of white patients have reported mortality rates of up to 9% and LV function recovery rates of up to 54%.[3] In contrast, studies from Haiti and South Africa consisting mostly of African patients have reported mortality rates of up to 15.3% and LV function recovery in 28-35% of patients.[4,5]

This difference between the studies from the United States and those from Haiti and South Africa may be due, among other factors, to ethnic and socioeconomic factors that influence the prognosis of PPCM. To our knowledge, there are no published reports from the United States evaluating the effect of ethnicity and socioeconomic factors on the prognosis of PPCM. We hypothesized that prognosis of PPCM in economically disadvantaged and African American women from the United States would be similar to that of Haiti and South Africa and different from previously reported studies from the United States. Thus, the objective of our study was to evaluate whether ethnicity and poverty significantly influence the prognosis of PPCM diagnosed at a university teaching hospital in Louisiana that serves largely an indigent population with a significant percentage of African American patients.

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Materials and Methods

We performed a retrospective analysis of charts of 1677 female patients who presented for treatment of heart failure at the Louisiana State University Health Science Center, Shreveport between January 1992 and December 2003. PPCM was defined using both clinical and echocardiographic criteria as unexplained appearance of heart failure in a previously healthy patient during last month of pregnancy or up to 5 months postpartum, LV ejection fraction (LVEF) below 45% or a reduced LV shortening fraction of less than 30% or both and an end-diastolic LV dimension (LVEDD) greater than 2.7 cm/m^2 body surface area.[1,6]

Patients who were identified to have PPCM by using the definition already defined were followed after diagnosis for an average 24 (range, 0.1-264) months to determine the prognosis and factors significantly associated with the death and recovery of LV function. All patients with the diagnosis of PPCM had an echocardiographic assessment at diagnosis, 9 months, and again at the last follow-up visit. We defined LV function recovery as the presence of LVEF of 50% or higher at any follow-up visit after the diagnosis.

Statistical analysis

The χ^2 and simple logistic regression analyses were used to determine factors significantly associated with death and recovery among the categorical and numeric variables, respectively. Patients who died were compared with those who survived on echocardiographic data using the 2-sample Student t test. Similar comparison was performed between those who recovered by their last follow-up and those who did not. The 1-sample Z test for an unknown proportion was used to compare the observed death and recovery rates with those for Haiti and South Africa (average of 14.8% and 31.5%, respectively). Nonrecovery

TABLE 1
Summary statistics on demographic and clinical data on 44 study patients

Variable	Mean ± SD (range) or number (%)
Age at diagnosis (y)	25.2 ± 6.9 (14-44)
Race	AA 39 (88.6)
	white 5 (11.4)
Had private insurance	5 (11.4)
Gravidity	3.0 ± 1.6 (1-8)
Parity	2.5 ± 1.4 (0-6)
Anemia	26 (59)
HB at diagnosis	10.8 ± 1.6 (7.4-14.8)
Hypertension	20 (45.5)
Delivery time (wk)	36.6 ± 3.8 (22-42)
Delivery mode	
V	25 (59.5)
CS	16 (38.1)
DC	1 (2.4)
Twin pregnancy	7 (17.1)
Birthweight, (g)	4986.38
Time of diagnosis	PP 37 (86.1)
	AP 7 (13.9)
NYHA class	3 (10.7)
1	10 (35.7)
2-3	15 (53.6)
4	
Symptoms	37 (92.5)
Dyspnea	36 (90.0)
Fatigue	34 (85.0)
Edema	26 (65.0)
Palpitations	11 (29.7)
Time delay from symptom onset to diagnosis (wk)	4.7 ± 7.9 (0-32)
Medications	
ACE	36 (83.7)
Diuretics	32 (79.2)
Beta blocker	26 (60.5)
Digoxin	24 (57.1)
Anticoagulant	14 (34.2)
Follow-up	
Length of time (months)	24 (0.1-248)
Death	7 (15.9)
Recovery	14 (35)

AA, African American; *ACE*, angiotensin converting enzyme; *AP*, antepartum; *CS*, cesarean section; *DC*, dilation and curettage; *HB*, hemoglobin; *NYHA*, New York Heart Association; *PP*, postpartum; *V*, vaginal delivery.

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rates at last follow-up visit were calculated using the Kaplan-Meier methods.

The study was approved by the institutional review board of the Louisiana State University Health Science Center.

RESULTS

Forty-four of 1677 patients reviewed met the diagnostic criteria for PPCM. Statistical summary on demographic and clinical characteristics of all 44 patients is shown in Table 1. The majority of the 44 PPCM patients (88.6%) were African Americans. Their mean age at diagnosis was 25.2 ± 6.9 (range, 14-44) years, mean gravidity 3.0 ± 1.6 (1-8), mean parity 2.5 ± 1.4 (0-6), and mean duration of pregnancy was 36.6 ± 3.8 (22-42) weeks. Sixteen (38.1%) patients had delivery by cesarean section for an obstetric indication. Seven patients had twin pregnancy. The mean birthweight was 4986.38 (1640-10,000) g.

Only 5 (11.4%) had private insurance and 39 (88.6%) had either Medicaid or no insurance. Twenty patients (45.5%) had elevated blood pressure and 26 (59%) had anemia. The average time delay from symptom onset to diagnosis of PPCM was 4.7 ± 7.9 (0-32) weeks and 86% of patients were diagnosed postpartum. The most common (90% of the patients) presenting symptom was dyspnea at rest or on exertion. None of these clinical variables were associated with either death or LV recovery.

PPCM mortality rate

During an average follow-up period of 24 (range, 0.1-264) months, 7 of 44 patients, all of them African American, died, representing a mortality rate of 15.9% (Table 1). Two of these 7 patients died within 6 months of diagnosis (3 and 4 months), and 4 died at 17, 24, 24, and 84 months. One patient died after an unknown duration following diagnosis. Analysis of cause of death in each case revealed that all died of cardiac related causes. Two patients died suddenly and 5 from progressive heart failure. In 1 patient the cause of death was stab injury, which was excluded from mortality data but illustrates the socioeconomic disadvantage of our patient population.