



Treating peripartum cardiomyopathy of HIV-infected patients in a low resource setting

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Introduction

The incidence of peripartum cardiomyopathy (PPCM) in African countries varies between 1:100 and 1:1000 live births. High incidence and prevalence of HIV infection, limited resources and paucity of antiretroviral drugs, necessitate studies to determine the clinical value and effectiveness of standard cardiac therapy in such HIV-infected PPCM patients.

Aim

To assess the influence of HIV-induced immunosuppression on left ventricular ejection fraction (LVEF) in PPCM patients on heart failure therapy.

Methods

We conducted a single centre prospective study of newly diagnosed HIV-positive (n = 24) and negative (n = 47) PPCM patients. All patients received the same cardiac therapy with angiotensin-converting-enzyme inhibitors, beta-blocking agents, diuretics and digoxin if indicated. Patients on antiretroviral therapy were excluded from this analysis. Echocardiographic studies and blood analysis were performed at baseline and after six months of heart failure therapy. Two-dimensional targeted M-mode echocardiography with Doppler colour flow mapping was performed using a Hewlett Packard Sonos 5500 (Philips, Bothell, Washington) echocardiograph attached to a 2.5 or 3.5 MHz transducer.

Conclusions

1. Our findings indicate that even in low-resource settings, where antiretroviral therapy may be absent, HIV-positive patients should not be neglected, but should receive optimal heart failure therapy as do HIV-negative patients with this disease, and have the stigma removed.
2. The effect of cardiac therapy on HIV plasma viral load and the mechanisms for changes in CD4 levels is currently under study.



Each ward at Chris Hani Baragwanath Hospital accommodates approximately 60 patients



Many patients live under very basic conditions



Echocardiographic demonstration of LV thrombus in PPCM patient

Results

Left ventricular dimensions and LVEF did not differ between HIV-positive and negative PPCM patients, neither at baseline nor after six months of heart failure treatment. HIV-positive patients improved their New York Heart Association functional class just like HIV-negative patients. After six months, three HIV-negative and two HIV-positive PPCM patients had passed away. In each group, one patient did not complete follow-up. Although absolute peripheral blood CD4 counts were significantly lower in HIV-positive as compared to HIV-negative patients, it is of interest to note that HIV-negative PPCM patients experienced a significant decrease of CD4 counts from baseline assessment to six months follow up.



The social situation of many patients is very difficult

| Parameter | HIV-positive baseline (n=24) | HIV-negative baseline (n=47) | p-value | HIV-positive 6 months (n=21) | HIV-negative 6 months (n=43) | p-value |
|---|------------------------------|------------------------------|---------|------------------------------|------------------------------|---------|
| NYHA FC | 3.2±0.6 | 3.3±0.7 | NS | 1.6±0.7 | 1.5±0.6 | NS |
| LV EDD (cm) | 5.6±0.6 | 5.7±0.6 | NS | 5.1±0.9 | 5.2±0.7 | NS |
| LVESD (cm) | 4.8±0.7 | 4.9±0.6 | NS | 4.1±0.9 | 4.0±0.8 | NS |
| Fractional shortening (%) | 17.7±16.4 | 14.0±4.7 | NS | 21.8±6.6 | 22.9±6.5 | NS |
| Ejection fraction (%) | 29.4±8.7 | 29.0±9.0 | NS | 43.2±11.2 | 45.0±11.3 | NS |
| Absolute CD4 x10 ⁹ /l (500-2010) | 445.1±296.6 | 1023.9±383.7 | <0.0001 | 381.0±280.0 | 820.9±284.6 | <0.0001 |

Table 1. Characteristics of HIV-positive vs. HIV-negative patients at baseline and after six months

| Baseline parameter | HIV-1 positive (n=24) | HIV-1 negative (n=47) | p-value |
|------------------------------------|-----------------------|-----------------------|---------|
| Age (years) | 32.2±7.6 | 29.3±7.4 | NS |
| No. previous children | 1.2±1.6 | 1.3±1.6 | NS |
| BMI | 26.6±6.3 | 26.0±7.2 | NS |
| MOD (CS=1) | 0.3±0.5 | 0.15±0.4 | NS |
| Onset of symptoms postdelivery (d) | 14.8±24.5 | 16.9±29.3 | NS |
| Systolic BP (mmHg) | 114.5±20.5 | 112.3±19.4 | NS |
| Diastolic BP (mmHg) | 77.2±12.4 | 74.3±13.9 | NS |
| Heart rate (beats/min) | 110.1±18.6 | 98.9±16.6 | 0.02 |

Table 2. Baseline demographic and clinical data of HIV-1 positive and negative PPCM patients

| Baseline parameter | HIV-1 positive (n=24) | HIV-1 negative (n=47) | p-value |
|---|-----------------------|-----------------------|---------|
| WCC x10 ⁹ /l (4.0-10.0) | 5.3±1.6 | 7.8±4.6 | 0.02 |
| Hb g/dL (12.1-16.3) | 10.4±2.0 | 11.7±1.7 | 0.009 |
| CRP mg/l (0-10) | 19.9±28.3 | 24.4±21.5 | NS* |
| Absolute CD4 x10 ⁹ /l (500-2010) | 445.1±296.6 | 1023.9±383.7 | <0.0001 |
| CD4% of lymphocytes | 22.7±11.8 | 46.3±9.6 | <0.0001 |
| CD45 +ve WCC x10 ⁹ /L | 5.1±1.6 | 6.1±2.2 | NS |
| Albumin g/L (35-52) | 33.6±6.6 | 35.7±7.5 | NS |
| Cholesterol (mmol/ml) | 3.2±1.2 | 3.9±1.5 | NS |
| Triglycerides (mmol/ml) | 1.1±0.5 | 1.2±0.7 | NS |
| LDL (mmol/L) | 1.9±0.9 | 2.3±1.1 | NS |
| HDL (mmol/ml) | 0.8±0.3 | 1.0±0.4 | 0.02 |
| IgG g/l (7.00-16.00) | 27.7±7.5 | 15.8±4.8 | <0.0001 |
| IgM g/L (0.40-2.30) | 2.1±1.2 | 1.6±0.7 | NS |
| IgA g/L (0.70-4.00) | 3.2±1.7 | 3.4±1.6 | NS |

Table 3. Baseline blood parameters of HIV-1 positive versus negative PPCM patients