Methamphetamine-associated cardiomyopathy: a case-controlled study of clinical characteristics, management and outcomes

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Topic(s):
Cardiotoxicity of Drugs and Other Therapies

Citation:
Background: Methamphetamine-associated cardiomyopathy (MAC) is an increasingly diagnosed condition with poor prognosis, and there remains paucity of literature including how MAC differs from other cardiomyopathies. We compared the characteristics and outcomes MAC patients with non-ischaemic cardiomyopathy controls at our centre.

Methods: Clinical profile, management and outcomes were prospectively assessed in consecutive patients with MAC at our hospital from 2006-2018. They were compared with randomly chosen controls with non-ischaemic dilated cardiomyopathy of similar age-group (20-65 year).

Results: Both groups had 62 patients followed for 3.0+/−2.9 years. MAC patients were younger, with higher proportion of Maori ethnicity, unemployment and cardiogenic shock during index admission and lower proportion of Pacific ethnicity, cardiovascular risk factors and atrial fibrillation. MAC patients also had higher peak NT-proBNP, lower ejection fraction, and lower attendance rate to outpatient appointments. There was no index admission mortality in both groups. MAC had higher mortality and trend to higher heart failure re-admissions rates during follow-up (Figure 1). Amongst MAC patients, baseline left ventricular end diastolic diameter and failure of improvement in right ventricular systolic function by one category during follow-up were independent predictors of mortality, while failure of improvement of left ventricular ejection fraction by one category predicted heart failure readmission.

Conclusions: MAC patients were younger but sicker on presentation, with higher mortality and trend towards higher heart failure readmission rates during medium-term follow-up than controls. Adherence to therapy and attendance to appointments may improve cardiac systolic function over time to reduce adverse clinical endpoints.
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Figure 1: Kaplan-Meier curves for a) all-cause mortality and b) heart failure re-admissions during follow-up (HR=hazards ratio, 95% CI=95% confidence interval, P=log-rank test p-value)

(a) Survival rate (%) vs Time (years)

Control group
Methamphetamine group
HR 2.7 (95% CI 1.1-6.2) P=0.029

(b) Survival rate (%) vs Time (years)

Control group
Methamphetamine group
HR 1.6 (95% CI 1.0-2.8) P=0.075