Background

Mortality after a first myocardial infarction (MI) in the general population has improved over the past 25 years; much of this improvement can be attributed to better management of cardiovascular disease (CVD) risk factors.1,2 In-hospital mortality after MI shows an inverse association with the number of CVD risk factors that are present at the time of MI, with in-hospital mortality rates being increased by 54% in those with no risk factors present compared to those with 5 risk factors. It is speculated that individuals with no risk factors present may have other, as yet unidentified, factors that may contribute to progressive disease.

To our knowledge, no study has described clinical outcomes after an MI in the HIV-positive population nor examined changes in such outcomes over time.

Study objective

To evaluate changes over time in short-term mortality post-MI in the D:A:D study and to investigate possible reasons for these changes.

Methods

The D:A:D study is an observational study of >90,000 HIV-positive patients from 11 cohorts in Europe, Australia, and the United States. The primary study aim is to investigate associations between the use of antiretroviral drugs and risk of CVD and other major disease events.

Data are collected prospectively during routine clinic visits, and the standardized dataset includes information on socio-demographic factors, AIDS events and deaths, known risk factors for CVD, laboratory markers for monitoring HIV (including CD4 count and HIV RNA) and CVD (including total/HDL cholesterol and triglycerides), antiretroviral treatment and treatments that influence CVD risk.

All incident cases of MI and stroke are reported to the study co-ordinating centre for validation and coding using criteria from the WHO MONICA study.7 Reported MI are classified as definite or possible, or unclassifiable, strokes are classified as definite or possible.

Statistical methods

Patients with an MI that occurred during prospective D:A:D follow-up were identified; post-MI mortality trends are described using Kaplan-Meier plots.

Associations between calendar year and short-term mortality (death in first month after diagnosis of MI) were identified using logistic regression with adjustment for the following factors:

- Age, gender, mode of HIV acquisition, ethnicity/racial group, cohort, current/cumulative exposure to PI/NRTI/NNRTI, AIDS, latest CD4 count and HIV RNA, smoking status, body mass index (BMI), family history of CVD, prior hypertension, dyslipidaemia, diabetes, MI or stroke, Framingham risk and haemoglobin.

- Associations were then additionally adjusted for interventions received in the first month after MI (in the 703 patients surviving for >1 day).

- Interventions considered for the present analysis were invasive procedures (angioplasties, coronary artery bypass grafts or cardiac endarterectomies) or the use of medications to reduce the risk of CVD (lipid-lowering drugs, anti-platelet drugs, ACE inhibitors or other anti-hypertensive medication).

Results

Patient characteristics at the time of MI are shown in Table 1; the key demographic and clinical characteristics of 844 patients at time of first MI during prospective follow-up are presented in Table 1. OR (/later year) (95% CI) 1.02 (0.94, 1.10)

Additionally adjusted for use of invasive procedures and/or medications in the first month post-MI.

Improvements in short-term mortality following myocardial infarction (MI): the D:A:D Study

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CASES AND METHODS

The improvement in short-term survival post-MI that we have seen since 1999 appears to be largely driven by those patients who do not appear to receive these interventions. Several questions therefore remain:

- Is this due to under- or delayed ascertainment of information on the receipt of invasive procedures/drug therapy within study databases?
- Is this a similar rate to that seen in the general (HIV-negative) population, i.e. Is this a general problem common to all individuals with an MI?
- Have patients received other interventions (e.g. dietary advice, interventions to increase smoking cessation or exercise) that are notcaptured in the D:A:D dataset.

Further analyses of the D:A:D dataset will consider longer-term outcomes, as well as associations between the pre-MI CD4 count and mortality.

References


Acknowledgements


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