Are traditional risk factors associated with cardiovascular events in HIV positive subjects?

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Background:

- There is growing concern regarding increased cardiovascular risk (CVR) among people living with HIV. The underlying reasons for this are debated.
- There has been research into the role of direct viral injury[1],independent biomarkers of high CVR[1] and associations with individual antiretroviral drugs[2]. However, their importance is still unknown.
- It can be difficult, in practice, to have full confidence in CVD risk prediction calculators that are not validated in an HIV positive population.
- In our clinic, QRISK2, a UK based CVR assessment tool, is used to calculate CVR. It is validated for use in non-HIV positive populations and has been shown to be more accurate than the Framingham risk calculator[3].
- QRISK2 takes account of ethnicity, socioeconomic status, atrial fibrillation, chronic kidney disease and rheumatoid arthritis, in addition to the traditional risk factors used in Framingham[4]. NICE recommends intervention for primary prevention in those who have a CVR of ≥20% over 10 years[5].
- We question: is it good enough to focus on traditional risk factors when assessing cardiovascular risk in HIV-positive individuals?

Methods:

We reflected on our own cohort to assess whether patients who have been diagnosed with ischaemic heart disease (IHD) had traditional risk factors pre-event and compared risk factors with that of our non-IHD population.

In our initial cohort of 1017 registered patients, QRISK2 had been used to assess 352 patients; these subjects formed our 'Non-IHD' group. We identified all patients within our initial cohort who had experienced a significant IHD event, defined as angina with coronary artery disease confirmed on angiogram, MI, angioplasty or coronary artery bypass graft (n=19). These subjects formed our 'IHD' group.

We retrospectively calculated pre-event QRISK2 scores for those who have had a first IHD event. Complete data was available for 15 patients (IHD cohort). The prevalence of traditional risk factors was compared between groups. Data was collected on CD4 counts and use or non-use of antiretroviral therapy at the time of event in the IHD group.

Categorical variables were compared by Fisher exact test and continuous variables by Student t test or Mann-Whitney U test as appropriate.

Results:

1.8% of our cohort (1017) experienced a significant IHD event. 74% of the IHD cohort and 34% of the Non-IHD group were aged 45 years or over. Gender and ethnicity is shown in Figure 1.

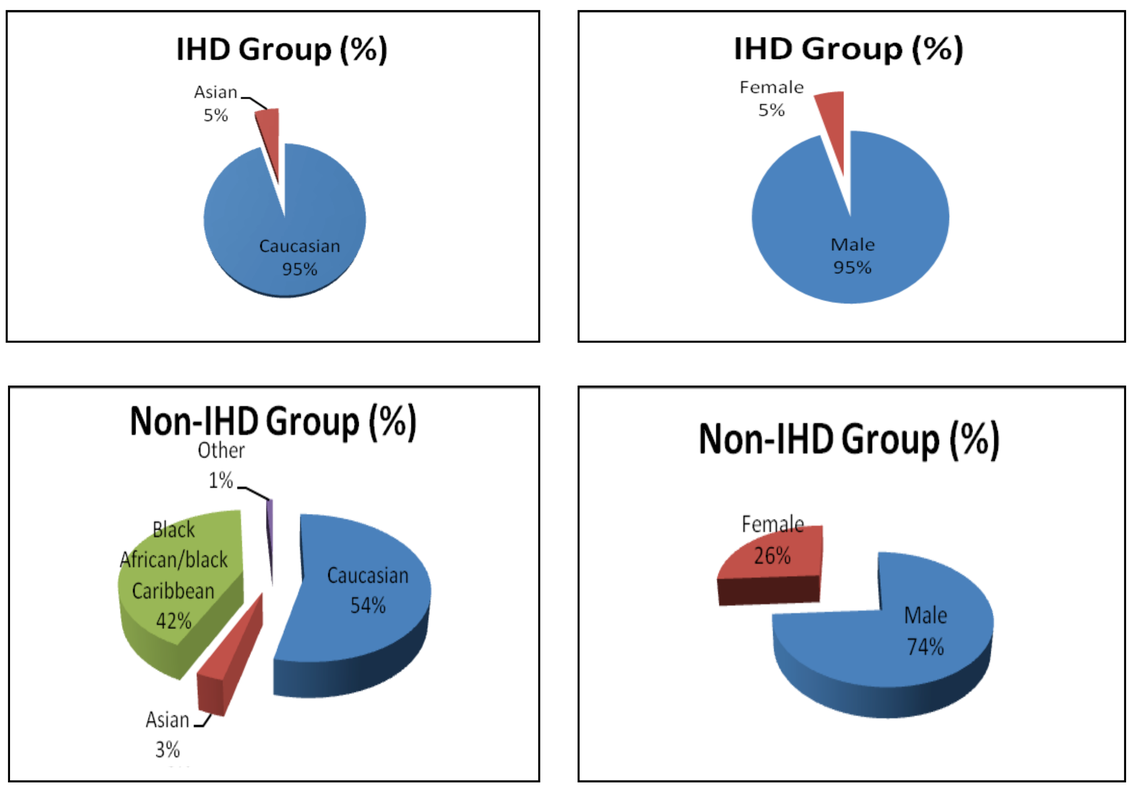


FIGURE 1: Gender and ethnicity (%) in IHD and Non-IHD groups

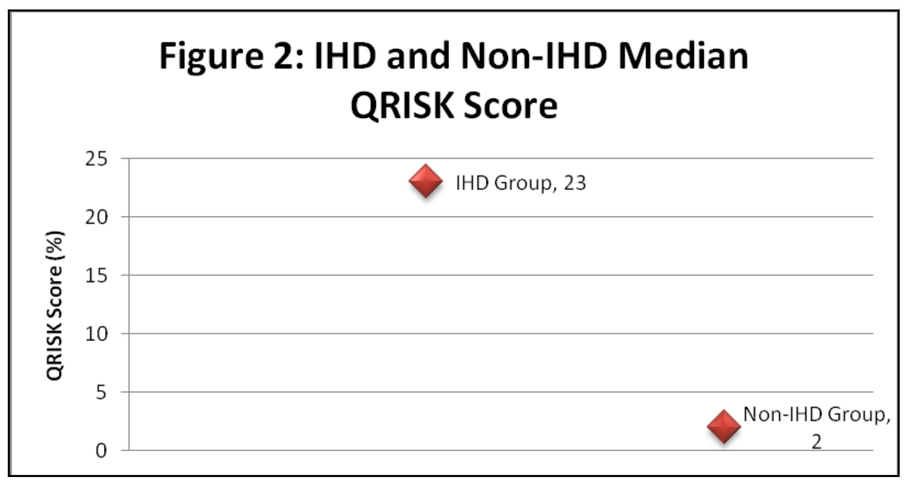
In our cohort, traditional risk factors, age (P=<0.001), smoking (P=<0.001), central obesity (P=<0.006), family history of IHD (P=<0.001) and hypertension (P=<0.001) were positively associated with IHD (refer to Table 1).

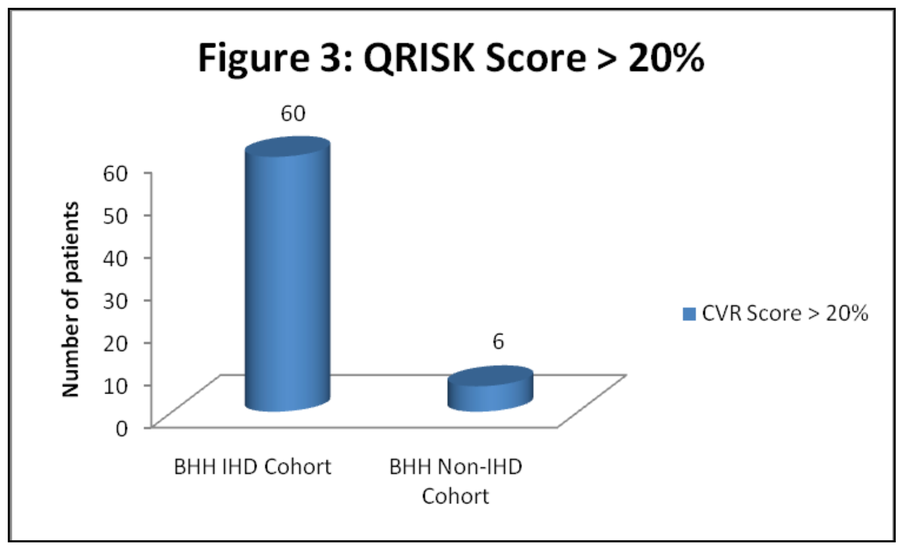
TABLE 1: Risk factors associated with MI in HIV positive cohort

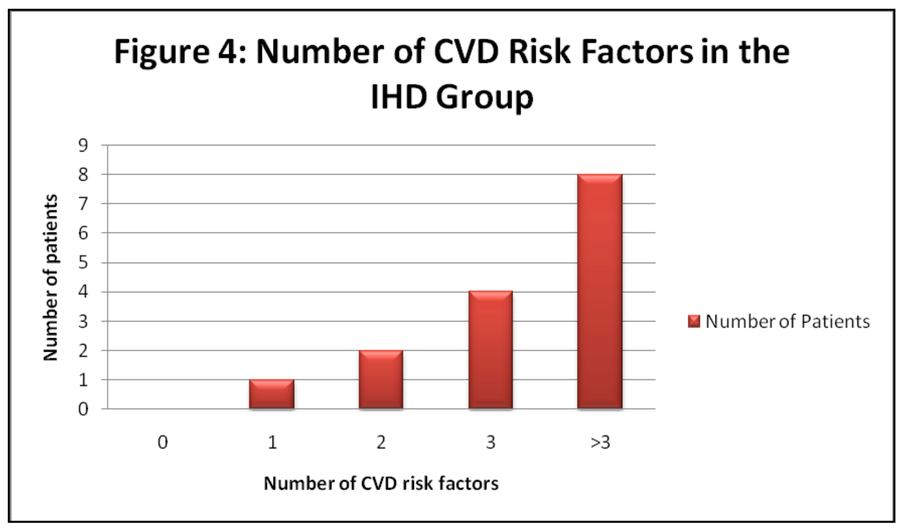
Risk Factor	IHD n=15 number (%)	Non-IHD n=352 number (%)	P-value
Age	50 years	41 years	<0.001
Smoking	12 (80)	95 (27)	<0.001
Diabetes	1 (7)	4 (1)	0.19
Central obesity	11 (73)	128 (36)	0.006
Family history MI or Angina	11 (73)	74 (21)	<0.001
Hypertension	6 (40)	65 (18)	0.04

Average total cholesterol, HDL-C and triglyceride levels were available for 74% of the MI cohort and 100% of the non-MI cohort. Lipid profiles were similar between the two groups, however, statistical analysis was not performed on this data.

Median QRISK score was significantly higher in the IHD group compared to the non-IHD group, 23% [interquartile range (IQR) 12–33%] and 2% (IQR 1–6%) respectively (P=<0.001) (refer to Figure 2). 60% of our IHD cohort and 6% of our non-IHD cohort had a QRISK CVR > 20% (refer to Figure 3). 93% had 2 or more traditional risk factors for IHD (refer to Figure 4).







Mean CD4 cell count was 543 cells/mm³ of those with a documented CD4 at the time of event in the IHD cohort, with 40% of this cohort having a CD4 of over 500 cells/mm³. 80% (n=12) of this group were on ARV therapy at the time of their IHD event, with a mean CD4 count of 526 (25-1054) cells/mm³. Of the 20% (n=3) not on ARV therapy, the mean CD4 count at the time of event was 325 cells/mm³. There was a wide range of duration of ARV therapy use and duration of known HIV infection at the time of IHD event.

Conclusion:

- **Within our HIV positive cohort 93% of patients with significant cardiovascular event (IHD group, n=15) had 2 or more traditional risk factors.**
- **60% of those individuals had a QRISK2 score over 20%.**
- **Most of these patients were on ARVs with good CD4 counts at the time of the event.**
- **Despite concern about HIV as an independent risk factor for IHD, traditional risk factors predominated in this group.**

We conclude that focusing our attention on traditional risk factors should identify the majority of patients at high risk of cardiovascular disease.

References:

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2) DAD Study Group, Friis-Møller N, Reiss P, Sabin CA et al. Class of antiretroviral drugs and the risk of myocardial infarction. N Engl J Med. 2007;356:1723.

3) Colins.S, Altman.D. An independent and external validation of QRISK2 cardiovascular disease risk score: a prospective open cohort study. BMJ 2010;340:c2442

4) QRISK Cardiovascular Risk Calculator http://www.qrisk.org/

5)NICE clinical guideline 67: Lipid modificationwww.nice.org.uk/nicemedia/pdf/CG67NICEguideline.

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