Entamoeba histolytica in male homosexuals

P G Sargeaunt,* J K Oates,† I MacLennan,‡ J D Oriel,¶ and D Goldmeier‡

From the *Department of Medical Protozoology, London School of Hygiene and Tropical Medicine; †Westminster Hospital; and ¶University College Hospital, London

SUMMARY The mobility patterns of four enzymes using cultured trophozoites of Entamoeba histolytica were examined by electrophoresis. By this means the stocks of amoebae isolated from male homosexuals were characterised into zymodemes. No amoebic stock isolated corresponded to a pathogenic zymodeme.

Introduction

Characteristic isoenzyme patterns have been identified for all the intestinal amoebae of man. Among these, stocks of Entamoeba histolytica are distributed into 18 pathogenic and non-pathogenic zymodemes. All the amoebic stocks characterised were collected not only from hospital patients within the UK but also from such endemic areas in the world as India, Central America, and South Africa. The amoebae were isolated as trophozoites by inoculation of material into culture media containing bacteria. The series of isolations reported here were compared with those already characterised.

Materials and methods

Samples of faeces collected from male homosexual volunteers attending two London hospitals and one Edinburgh hospital were inoculated into culture as described.1,2 The trophozoites harvested from culture were lysed in water by freezing and thawing, and the released enzymes protected by the use of dithiothreitol, e-amino-caproic acid, and ethylene diaminotetraacetic acid. Finally, the material was stored in liquid nitrogen. The lysates were applied to thin layer starch gel electrophoresis and subsequently the isoenzyme patterns located visually by the use of a formazan development. The zymodemes were identified using EC 5319 glucose-phosphatase isomerase (GPI); EC 11140 L-malate : NADP+ oxidoreductase (oxaloacetate decarboxylating) (ME); EC 2751 phosphoglucomutase (PGM); and EC 2711 hexokinase (HK).4

Address for reprints: Mr P G Sargeaunt, Department of Medical Protozoology, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT

Accepted for publication 13 December 1982

The cellulose acetate membrane precipitin test for amoebiasis5 was used to test the serum of all the London subjects (the majority of cases) in the survey and all proved to be negative.

Results

The isoenzyme patterns for the 18 zymodemes of E histolytica so far characterised are shown in the figure. Among these patterns those showing the presence of a β band and the absence of an α band in PGM are known to be expressed by pathogenic strains. The remaining zymodemes were characteristic of non-pathogenic strains isolated from asymptomatic "cyst-passers." With only one exception, advanced bands in hexokinase confirmed the PGM interpretation.

Table I shows the distribution of faecal protozoa from 470 male homosexuals, and there were some mixtures of species of amoebae. Of the 52 samples containing E histolytica, however, all were non-pathogenic, and their distribution into four zymodemes is shown in table II. Zymodemes I and III were the most commonly encountered, as occurs generally throughout all the areas of the world so far surveyed.

Discussion

Over the past few years the presence of E histolytica in male homosexuals has been reported on several occasions. Because of their social habits this section of the population are likely to disseminate E histolytica more readily than heterosexuals.

In 1967 Most6 addressing the American Society of Tropical Medicine and Hygiene suggested an association between amoebiasis and homosexuality. In the 1970s numerous workers7-14 suggested an
Zymodeme _ motyla_, parasites in_ 36 507 of_ infected subjects_ found_ Entamoeba harti nai_ and Entamoeba histolytica_ Protozoa_ subjects_ 36 507 of_ found_ histolytica_ health project_ self- selected_ testinal infections. Association between_ Endolimax nana_ TABLE I_ Distribution of faecal protozoa from 470 male homosexuals_ Protozoa_ No of subjects_ Entamoeba histolytica_ 52_ Entamoeba coli_ 84_ Entamoeba hartmanni_ 43_ Endolimax nana_ 78_ Iodamoeba buetschlii_ 21_ Giardia lamblia_ 17_ TABLE II_ Distribution of Entamoeba histolytica zymodemes from 470 male homosexuals_ Zymodeme_ I_ III_ V_ XVII_ Total No_ 28_ 22_ 1_ 1_ To show that the vast majority of homosexuals are passing only non-pathogenic _E histolytica_, we have examined faecal samples from 470 such people. When cultured 52 of these samples grew _E histolytica_ (11·1% infection rate), while there were also pure growths and mixtures of the other intestinal amoebae. Helminths were never identified by concentration methods of all samples._TABLE I_ Distribution of faecal protozoa from 470 male homosexuals_ Protozoa_ No of subjects_ Entamoeba histolytica_ 52_ Entamoeba coli_ 84_ Entamoeba hartmanni_ 43_ Endolimax nana_ 78_ Iodamoeba buetschlii_ 21_ Giardia lamblia_ 17_ TABLE II_ Distribution of Entamoeba histolytica zymodemes from 470 male homosexuals_ Zymodeme: I_ III_ V_ XVII_ Total No_ 28_ 22_ 1_ 1_ association between homosexuality and gastrointestinal infections. Their research was carried out in highly selected populations. William et al_ studied 89 self selected homosexual men attending a specific health project in New York; 26% had infection with _E histolytica_, _Giardia lamblia_, or both. Kean_ found in his survey that 40% of 126 patients had _E histolytica_ or _G lamblia_ or both in their faeces._Only some of the subjects were specifically treated for amoebiasis, and the decision for this was on clinical grounds alone. Thus some men passing _E histolytica_ cysts in their faeces were not treated, and these have subsequently not presented with amoebic symptoms. An 11% infection rate for _E histolytica_ is high when compared with the approximate rate of 0·5% in the general population in the two cities used for this survey. Furthermore, the rate of 11% is also about 10 times that of pathogenic _E histolytica_ found in a survey_ of a known endemic area of Africa for this amoebae._KEystone et al_ in their study in 1980 in Toronto found 36·5% of 200 homosexuals were similarly infected with either or both parasites. In contrast, they found only a 4% infection rate with these parasites in 100 heterosexuals used as controls._To show that the vast majority of homosexuals are passing only non-pathogenic _E histolytica_, we have examined faecal samples from 470 such people. When cultured 52 of these samples grew _E histolytica_ (11·1% infection rate), while there were also pure growths and mixtures of the other intestinal amoebae. Helminths were never identified by concentration methods of all samples. Only some of the subjects were specifically treated for amoebiasis, and the decision for this was on clinical grounds alone. Thus some men passing _E histolytica_ cysts in their faeces were not treated, and these have subsequently not presented with amoebic symptoms. An 11% infection rate for _E histolytica_ is high when compared with the approximate rate of 0·5% in the general population in the two cities used for this survey. Furthermore, the rate of 11% is also about 10 times that of pathogenic _E histolytica_ found in a survey_ of a known endemic area of Africa for this amoebae._KEystone et al_ in their study in 1980 in Toronto found 36·5% of 200 homosexuals were similarly infected with either or both parasites. In contrast, they found only a 4% infection rate with these parasites in 100 heterosexuals used as controls._To show that the vast majority of homosexuals are passing only non-pathogenic _E histolytica_, we have examined faecal samples from 470 such people. When cultured 52 of these samples grew _E histolytica_ (11·1% infection rate), while there were also pure growths and mixtures of the other intestinal amoebae. Helminths were never identified by concentration methods of all samples. Only some of the subjects were specifically treated for amoebiasis, and the decision for this was on clinical grounds alone. Thus some men passing _E histolytica_ cysts in their faeces were not treated, and these have subsequently not presented with amoebic symptoms. An 11% infection rate for _E histolytica_ is high when compared with the approximate rate of 0·5% in the general population in the two cities used for this survey. Furthermore, the rate of 11% is also about 10 times that of pathogenic _E histolytica_ found in a survey_ of a known endemic area of Africa for this amoebae._FIGURE Zymodemes of _Entamoeba histolytica_ identified using EC 5319 glucose phosphate isomerase (GPI); EC 11140 L-malate:NADP+ oxidoreductase (oxaloacetate decarboxylating) (ME); EC 2751 phosphoglucomutase (PGM); and EC 2711 hexokinase (HK).
Entamoeba histolytica in male homosexuals

We wish to thank the nurses for assistance and cooperation in collecting the specimens. This work was supported by grants from the Wellcome Trust and the Seamen's Hospital Society, to whom we are sincerely grateful.

References

Entamoeba histolytica in male homosexuals.

P G Sargeaunt, J K Oates, I MacLennan, J D Oriel and D Goldmeier

doi: 10.1136/sti.59.3.193

Updated information and services can be found at:
http://sti.bmj.com/content/59/3/193

These include:

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/