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Tuberculosis in Inner London: evidence for an increase in young adults and immigrants

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SUMMARY

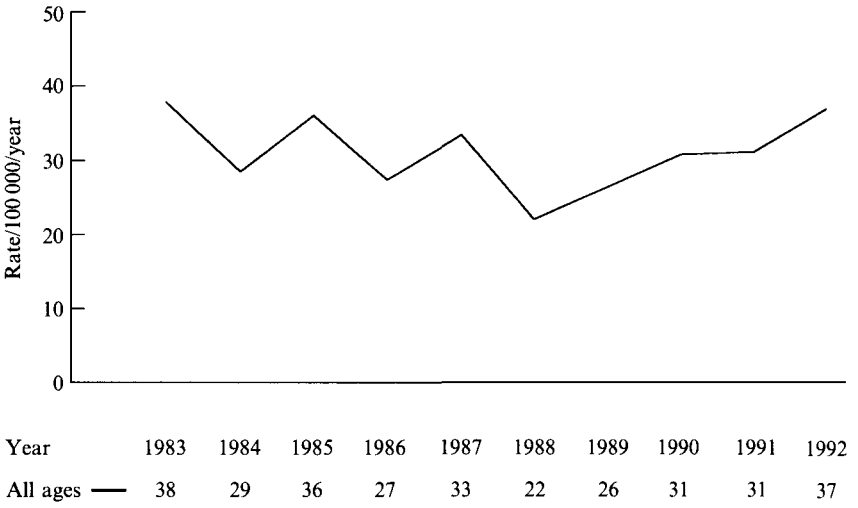
We report a marked increase in the rate of notifications of tuberculosis in young adults in the London Borough of Lambeth. Analysis of notifications made to the Proper Officer over a 10-year period showed that the age specific notification rate in the cohort aged 20–44 years increased from 30/100000 in 1983 to 51/100000 in 1992. Analysis of St. Thomas' Hospital laboratory records of patients seen between 1984 and 1991 from whom *Mycobacterium tuberculosis* was isolated showed an increase in the number of patients of African origin from five in the first half of the study period (1984–7) to 25 in the second half (1988–91): 21 of these 25 had immigrated into England within 4 years of their illness. This finding is being further investigated in a prospective study of ethnicity, travel history and date of immigration of Lambeth residents notified with tuberculosis.

INTRODUCTION

Notifications of tuberculosis in England and Wales have declined during the past century but since 1987 the decline has halted [1, 2]. This trend has also been seen in North America [3]. Tuberculosis occurs predominately in the elderly, immigrants and the socioeconomically disadvantaged in the UK and elsewhere [4–7]. Increases in other countries have been linked to non-compliance with treatment, co-infection with HIV and the emergence of multiresistant strains [7, 8]. We studied the notifications of tuberculosis in Lambeth from 1983–92 and analysed the laboratory records from 1984–91 of patients from whom *Mycobacterium tuberculosis* was isolated.

METHOD

A 'case' of tuberculosis was defined as a record of a notification of a patient with tuberculosis to the Proper Officer; by definition these cases were resident in Lambeth at the time of diagnosis. For the study on laboratory data a 'case' was defined as a positive culture from a Lambeth resident.



Year	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
All ages —	38	29	36	27	33	22	26	31	31	37

Fig. 1. Notification rates of tuberculosis in Lambeth residents from 1983–92.

Information on notified cases was taken from a local ledger which recorded each notification of tuberculosis in Lambeth residents made to the Office of Population Censuses and Surveys (OPCS). This information gave the patient's name, age, sex, site of disease and address which was put on a computer database (SmartWareII: V1.51). Duplicates were excluded from the database by the use of a computer program. Further duplicates were excluded manually: this was necessary because names from ethnic minorities are prone to transcription errors.

Age specific attack rates were calculated for four age groups, 0–19, 20–44, 45–64 and over 64 years, using the OPCS mid-year population estimates [9].

Data on patients from whom *M. tuberculosis* was isolated have been kept by St Thomas' Hospital Microbiology Department in a ledger which listed name, age, country and ethnic origins and the antibiotic sensitivity pattern of the isolate. The date of immigration, details of country of origin and HIV status were sought from clinical notes. A comparison was made between the number of patients seen from 1984–8 and the number from 1988–91.

RESULTS

Notifications

The number of notifications to the Lambeth Proper Officer was 93 in both 1983 and 1992 corresponding to notification rates of 38/100000 in 1983 and 37/100000 in 1992 (Fig. 1, χ^2 test for trend $P = 0{\cdot}57$). During the 10-year period there was a downward trend from 1983–8 ($P = 0{\cdot}012$) and an upward trend from 1989–92 ($P = 0{\cdot}055$). Similar statistical analysis of the data by age groups showed a significant upward trend from a rate of 30/100000 in 1983 to 51/100000 in 1992 ($P = 0{\cdot}006$. Fig. 2) in the 20–44 year age group. There was a downward trend in the 45–64 age group ($P = 0{\cdot}0008$) and no trend observed in the 0–19 ($P = 0{\cdot}18$) or the > 64 age group ($P = 0{\cdot}25$).

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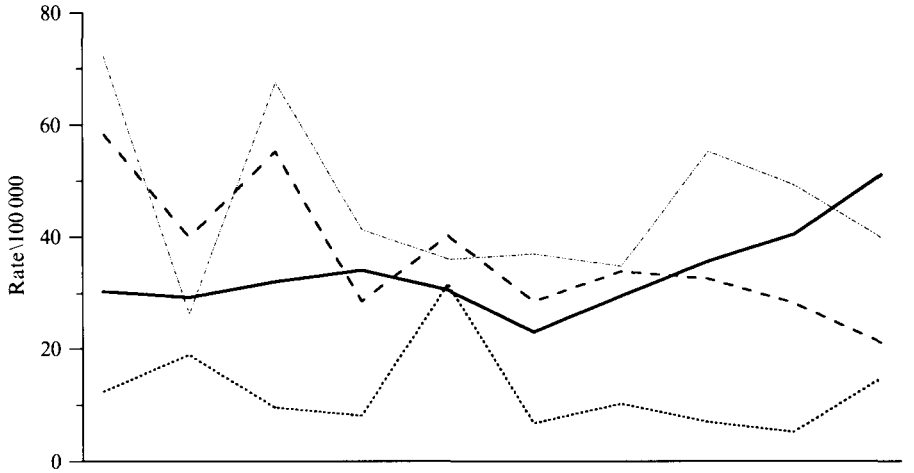

Year		1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
0–19	·····	12	19	10	8	32	7	10	7	5	15
20–44	——	30	29	32	34	30	23	29	36	40	51
45–64	– –	58	40	55	29	40	28	34	33	28	21
Over 64	–·–	72	26	68	41	36	37	35	55	49	40

Fig. 2. Age specific notification rates of tuberculosis in Lambeth residents from 1983–92.

Table 1. *Comparison of the number of patients with isolates of* Mycobacterium tuberculosis *seen in two 4-year periods, 1984–7 and 1988–91, by age group and country of origin*

Age group		Europe	ISC*	Africa	Caribbean	Other	Total
0–19:	1984–7	4	1	0	1	5	11
	1988–91	1	0	3	0	1	5
20–44:	1984–7	20	6	5	5	3	39
	1988–91	14	6	21	2	6	49
45–64:	1984–7	24	6	0	6	1	37
	1988–91	13	5	1	3	3	25
> 64:	1984–7	9	0	0	0	1	10
	1988–91	16	0	0	1	2	19
Total	1984–7	57	13	5	12	10	97
	1988–91	44	11	25	6	12	98

* ISC, Indian Sub-Continent.

Laboratory data

Analysis of the laboratory data showed that the total number of isolate-proven cases in Lambeth residents seen in the two 4-year periods 1984–7 and 1988–91 were 97 and 98 respectively (see Table 1). The number of cases from Africa increased from 5 between 1984 and 1987 to 25 between 1988 and 1991 whilst the number of patients of European origin fell (from 57 to 44) and there was little change in the numbers from the Indian Sub-Continent (from 13 to 11). The rise in African cases was mainly in the 20–44 year age group where the number of cases

increased from 5 to 21. Two of the strains isolated from African patients were resistant to isoniazid and one of these was also resistant to streptomycin as was a further isolate from a Portuguese patient. Information taken from the notes of the patients seen in the 4-year period 1988–91 indicate that 21 of the 25 from Africa had immigrated into England within 4 years of their illness and that 15 of these 25 (60%) had pulmonary disease. Only 3 of the 25 patients from Africa had the result of an HIV test in their notes, one of whom had evidence of infection with HIV.

DISCUSSION

The change in the trend of tuberculosis notifications in the mid 1980s is similar to the pattern seen nationally [2] and to that in the United States of America [3] where the progressive decline throughout the century also levelled off during the eighties and changed into a rise in the late eighties and early nineties. Although at 40/100000 cases the incidence in Lambeth is far higher than the national incidence (10/100000) it is comparable to that in other inner city areas [10]. The new finding is that there has been a marked increase in Lambeth in the age specific rates in the 20–44 age group.

This rise in tuberculosis in young adults could be due to new immigrants. refugees, travellers to high prevalence countries, the HIV outbreak or homelessness. The population of Lambeth is highly mobile and multiracial: 33% belong to an ethnic minority [11], 6% are Black African and 12% Black Caribbean. Unfortunately the notification data do not include place of birth so although a proportion of the names may be attributed to an ethnic minority neither their country of birth or their travel history are known: although other authors [12] have equated ethnicity with country of birth it is important to make this distinction. The hypothesis that the increase in tuberculosis in Lambeth may be due in part to people who have recently immigrated is supported by the data collected in this study. While it is not surprising to find cases of tuberculosis in immigrants from a country where the disease has a high prevalence it is important for medical practitioners to be aware of the risk of tuberculosis in local ethnic groups from all countries with a high prevalence of tuberculosis. Whilst it is well recognized [13] that the risk of immigrants developing tuberculosis is greatest within 4 years of their immigration our findings again emphasise the importance of screening and referral of new immigrants to health services after their arrival. The increase in this group may be due to a higher rate amongst the immigrants or to an increase in the number of immigrants. The countries of origin of the African immigrants in this study included Nigeria(9), Uganda(4), Ethiopia(3) and Somalia(2). There is no information as to the number of secondary cases but the fact that 60% of them had pulmonary disease underlines the importance of community infection control programmes [14]. Immigrant screening at the port of entry is at present inadequate: local screening programmes may offer an important contribution to tuberculosis control but the majority of immigrants are not traceable at the address given to the immigration authorities. Factors complicating tuberculosis in Africa include co-infection with HIV and the occurrence of multiresistant strains. Only one of the isolate proven cases was known to have HIV infection and of the three resistant strains none were resistant

to both isoniazid and rifampicin. A national survey found 0·6% of isolates resistant to these two drugs [15].

CONCLUSION

This investigation provides evidence that one cause of the rise in the notification rate of tuberculosis in young adults in Lambeth during the eighties and early nineties was the development of tuberculosis in young adults who had recently immigrated from Africa. We suggest that additional epidemiological information, specifically ethnicity, country of birth, date of immigration and recent travel history should be included on notification forms. These findings serve to emphasise the long recognized need to enhance both the local surveillance and referral systems for new immigrants and to review the effectiveness of international regulations for tuberculosis control.

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