

Miliary tuberculosis in a high prevalence area of the U.K.: Blackburn 1978–1993

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Thirty-nine cases of miliary tuberculosis treated between 1978–1993 in a district with a high incidence of tuberculosis are reported. Twenty-eight patients were of Indian Subcontinent (ISC) ethnic origin, 10 patients were Caucasian and one patient was Chinese. Mortality at 10% in both Caucasian (χ^2 4.94; 0.05 > P > 0.01) and ISC patients (χ^2 10.22; 0.001 > P) were significantly lower than in a recently reported series from Edinburgh, as was the proportion of post mortem diagnoses of miliary tuberculosis (χ^2 6.35; 0.02 > P > 0.01). Both the rate of miliary tuberculosis and the average age at diagnosis in Caucasian patients were lower than in the Edinburgh series suggesting that miliary tuberculosis could be under-diagnosed in the elderly Caucasian population in the Blackburn district. The better outcome of those diagnosed in life may be partly due to heightened awareness of tuberculosis locally and partly due to treatment by a centralized tuberculosis service.

Introduction

Sime *et al.* (1) showed in a recent paper that the incidence of miliary tuberculosis in Edinburgh showed no fall between 1954–1967 and 1984–1992, and furthermore had a significantly higher mortality in 1984–1992. The 1984–1992 cohort in their paper (1) was almost exclusively (96%) of Caucasian ethnic origin. The Blackburn Hyndburn and Ribble Valley District Health Authority (DHA) has had consistently high tuberculosis notification rates, at 63/100 000 in 1978–1979 (2) and 54/100 000 in 1983 (3), with some 70% of notifications of Indian Subcontinent (ISC) ethnic origin, for the last 25 yr. Reports of tuberculosis from pathology (including hospital and coroner's post mortems) and bacteriology are made to the Chest Clinic, and these are supplemented by clinical notifications. The supervision of drug treatment of all cases of tuberculosis by chest physicians is a long-standing district policy dating from the 1970s. The pattern and outcome of miliary tuberculosis in this high incidence area is reported.

Methods

Details of all notified cases of tuberculosis in the DHA are available, having been collected retrospec-

tively for the years 1978–1980, and prospectively since 1981. The age, sex, ethnic group, X-ray findings, histology and microbiology, and other sites of disease were known for all cases. These are shown in Table 1. Cases of cryptic miliary tuberculosis were diagnosed by their response to specific anti-tuberculosis drugs and all fulfilled the criteria set out by Proudfoot *et al.* (4). In the 1981 Census (5), the DHA had a total population of 279 000 with 258 000 of Caucasian ethnic origin, and 19 900 of ISC ethnic origin. In the 1991 Census (6), the total population was 265 000, comprising 238 000 of Caucasian ethnic origin and 23 900 of ISC ethnic origin. This gives an average ISC population of 21 900, and an average Caucasian population of 248 000 through the 1980's from which to estimate approximate incidences.

Results

In the years 1978–1993 inclusive, there were 39 cases of miliary tuberculosis, 28 patients of ISC ethnic origin, 10 patients of Caucasian ethnic origin and one patient of Chinese ethnic origin (excluded from Table 1).

There were 14 cases of classical miliary disease, three patients were Caucasian (mean age 51.3 years; range 2–79 years), three patients were Pakistani (mean age 35.7 years; range 23–54 years), seven patients were Indian (mean age 37 years; range 25–53 years) and one patient was Chinese (age 93 years). All had classical miliary shadowing. Five patients (two Caucasian; three ISC) had associated meningitis with

Received 21 November 1994 and accepted in revised form 13 April 1995.

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Table 1 Clinical details

	ISC ethnic	Caucasian ethnic
Number	28	10
Mean age (range) years	38.4 (16-85)	52.3 (2-79)
Age >60 years	2/28 (7.0%)	4/10 (40%)
Male:female	17:11	4:6
Cryptic miliary	18/28 (64%)	7/10 (70%)
Death	3/28 (11%)	1/10 (10%)
Post mortem diagnosis	2/28 (7%)	1/10 (10%)
Approximate annual incidence/100 000	7.99	0.25
Underlying pathology†	Diabetes (1)	Myeloma (1) Carcinoma prostate (1)

*ISC, Indian Subcontinent; †No patient was known to be HIV-positive or has subsequently been found to be so.

positive CSF cultures, five further cases had positive sputum cultures and one case had positive histology from skin lesions. Two patients died after the initiation of treatment, one patient at 4 days (93 years, Chinese, TB meningitis) and one patient at 6 weeks (23 years, ISC, Adult respiratory distress syndrome) from fatal thrombocytopenia developing 2 days after stopping rifampicin because of hepatitis on treatment.

Of the 25 cryptic cases, seven patients were Caucasian (mean age 52.7 years; range 19-76 years), 10 patients were Pakistani (mean age 39.3 years; range 16-85 years), and eight patients were Indian (mean age 39.5 years; range 21-71 years). Of the cryptic miliary cases, 22/25 (88%) had normal radiographs, two cases had focal nodular tuberculosis, and one case had evidence of previous tuberculosis with calcification. Three patients (Caucasian, 48 years; Pakistani, 38 years; Indian, 31 years) were all diagnosed at post mortem following deaths in the community. One other case was confirmed by positive sputum culture, the rest were diagnosed by response to specific anti-tuberculosis treatment alone (rifampicin, isoniazid, with pyrazinamide and/or ethambutol) and fulfilled Proudfoot *et al.*'s criteria (4).

Discussion

The incidence of miliary tuberculosis in Blackburn at approximately 0.25/100 000 in the Caucasian ethnic group and 7.99/100 000 in the ISC ethnic group, were both over twice that reported for England and Wales in 1983 (7) (0.1/100 000 and 3.0/100 000 respectively). The miliary tuberculosis incidence reported for Edinburgh (1) for 1984-1992

in the Caucasian ethnic group however was 0.7/100 000, seven times higher than for England and Wales (5), a strikingly higher rate which was not commented on by the authors.

Indian subcontinent cases were younger than Caucasian cases with only 7% aged over 60 years compared with 40% in the Caucasian ethnic group. This reflects the different age structure of the ISC ethnic population, which in 1991 (6) had 68.9% aged under 30 years and only 3.2% aged over 60 years. However, problems with data from the 1981 Census (5) prevent the calculation of age specific rates. The proportion of cryptic miliary disease at 60% in both ISC and Caucasian ethnic groups was higher than the 41% reported in Edinburgh (1), but the rate was lower in the Caucasian group.

The overall mortality in the 10 Caucasian cases reported here (1/10; 10%) was significantly lower than that in the Edinburgh series (1) of 14/28 (50%) (χ^2 4.94; 0.05 > P > 0.01). The outcome reported in this series in the ISC patients is also significantly better (3/28 vs. 14/28; χ^2 10.22; 0.001 > P), and the proportion of post mortem diagnosed cryptic miliary tuberculosis was also significantly lower (χ^2 6.35; 0.02 > P > 0.01). In the Edinburgh series (1), six patients were diagnosed post mortem giving eight deaths in 22 patients treated, which was significantly higher than this series with three post mortem deaths and two deaths out of 36 patients treated (χ^2 9.09; 0.005 > P > 0.001).

The lower rate of miliary tuberculosis in Caucasian patients, the younger average age and the lower proportion of post mortem diagnosis compared with the Edinburgh series (1), suggest that cases may be unrecognized in life locally and missed because fewer post mortems are performed. There was full ascertainment of histology in those with post mortems locally, but historically post mortem rates in both hospital and community deaths have been low in this district. No post mortem rates were given in the Edinburgh series (1) to allow a direct comparison.

The better outcome of miliary tuberculosis reported in this series can be attributed to a number of factors. Under 10% of cases were reported at post mortem so a higher proportion received drug treatment; the ethnicity of the majority of the cases increased awareness of the possible diagnosis; and the younger average age (43 years) is also likely to have contributed to reduced mortality, as increasing age has been shown to be an independent factor in deaths from pulmonary tuberculosis by multivariate analysis (8,9). Locally the management of tuberculosis by a centralized team, which promotes awareness of the diagnosis and prompt commencement of treatment,

could also have contributed to the better outcome. Suspicion of the diagnosis and early treatment remain the keys to lowering mortality from this form of tuberculosis (10).

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