

Results of follow-up of human contacts of bovine tuberculosis in cattle during 1993–7 in North Staffordshire

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(Accepted 8 February 2001)

SUMMARY

The purpose of the study was to describe the results of follow up of human contacts of bovine tuberculosis. The bovine tuberculosis cases occurred on farms in North Staffordshire between 1993 and 1997. A total of 162 people were identified as having close contact with cattle diagnosed as having bovine tuberculosis, or who had drunk unpasteurized milk from a herd with bovine tuberculosis. A retrospective review of chest clinic notes was performed. One hundred and thirty-eight people attended for follow up, and Heaf test results, necessity for chest X-ray and further clinical follow-up are described. No case of human *Mycobacterium bovis* infection was identified. It is suggested that follow-up of human contacts is limited to those with close contact with herds who have bovine tuberculosis and cattle with visible pulmonary lesions or evidence of udder infection. Children on the farms with affected cattle should also be offered BCG in advance of the routine school's programme.

INTRODUCTION

Although *Mycobacterium bovis* was historically an important cause of human tuberculosis, over the five years 1993–7 an average of 42 *M. bovis* isolates were reported nationally and less than 1% of human disease is confirmed as being caused by *M. bovis* (personal communication, Paul Van Buynder, Consultant Epidemiologist, Public Health Laboratory Communicable Disease Surveillance Unit, London). Most of the recent human disease occurs in the elderly and is felt to be reactivation of previous infection [1].

In the United Kingdom, bovine tuberculosis in cattle is relatively uncommon with new confirmed cases occurring in about 0·4% of the cattle herds each year [2]. However the incidence of bovine TB has been increasing in South West England since the late 1980s (an area with a known high incidence) and has been spreading to areas not usually associated with infection including the West Midlands. The number of reports of herds with outbreaks in Great Britain increased from 125 in 1991 to 471 in 1996 [3].

Assessment of humans exposed to herds with bovine tuberculosis varies from area to area. With the increase in incidence and spread of the disease in cattle, medical staff need to consider the human implications of such contact. Guidance on follow up

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was published by the Scottish Consultants in Public Health Medicine [4].

METHODS

In North Staffordshire Health Authority area, the State Veterinary Service (SVS) of the Ministry of Agriculture, Fisheries and Food advise the Consultant in Communicable disease Control (CCDC) of herds within North Staffordshire where there have been positive reactors for *M. bovis* and where visible lesions have been seen on postmortem examination, or where there is a positive culture for *M. bovis* (positive reactors with no visible lesions and negative culture are not notified).

Upon receipt of a report of confirmed *M. bovis* in cattle, a public health doctor or nurse and a local environmental health officer contacted the owner of the herd to establish the following: those with close working contact with the herd; those who have drunk unpasteurized milk; whether any milk is served to the general public e.g., 'bed and breakfast', and whether all milk is sent for pasteurization. Reassurance was given to the owners about the low likelihood of cattle to human transmission and advice was given about not drinking unpasteurized milk. All those with close cattle contact or who had drunk unpasteurized milk were referred to a local chest clinic for further follow up, following closely the Scottish guidelines.

The chest clinic health visitor followed guidelines from the British Thoracic Society (1994 Code of Practice) [5] in following up patients referred. Those with a Grade 2 Heaf test result and no previous history of BCG vaccine, with a Grade 3 or 4 Heaf test result or with symptoms of possible tuberculosis were further assessed by chest radiograph and clinical examination for lymphadenopathy. All children who had a grade 0 or 1 Heaf test result were offered BCG immunization.

RESULTS

Between 1993 and 1997 the Consultation Communicable Disease Control was notified of herds from 19 farms within North Staffordshire Health Authority area where there was suspected bovine tuberculosis. From these, 172 people were identified as living or working on these farms of which 162 were considered close contacts with the herd and offered chest clinic assessment.

One hundred and twenty-eight people attended the

chest clinic in Stoke on Trent, and 10 attended at one of the neighbouring health authority chest clinics. Ten people did not wish follow-up and no information on follow-up could be accessed from the clinic to which a further 14 people were referred. The age distribution of the 138 people followed up ranged from 2 to 72 years with a mean age of 32 years. The Heaf grade results for those tested are given in Table 1. Thirty-one people were given BCG vaccine, 27 of these being children under the age of 16 years. Twenty-two chest X-rays (CXRs) were performed: one showed evidence of old tuberculosis; while a second showed paratracheal lymphadenopathy. This individual's CXR and Heaf status were unchanged at 12 months. One subject with bilateral hilar lymphadenopathy was lost to follow-up. The remaining 19 CXRs showed no evidence of active disease.

DISCUSSION

There has been a recent increase in the number of herds with bovine tuberculosis in North Staffordshire and surrounding areas. Prompt reporting from the SVS ensured that any resulting human anxiety was addressed quickly. In general the farmers were more worried about the effect on their herds and livelihoods than on their own health, but there was concern as to the implications for children.

Of the 162 people identified as close contacts of cattle with bovine tuberculosis, we were not able to gain further information on 24 (15%). Of the 138 people followed up at chest clinics, for 25 no Heaf test results were available. In addition there are difficulties in the use of both Heaf testing and chest X-rays to detect *M. bovis* infection in that clinical manifestations of the infection are often delayed and extrapulmonary. We must therefore be cautious in the conclusions we draw from this review of notes of patient contacts. With these limitations, the follow up of the 138 people we describe suggests that human illness following exposure to cattle infected with *M. bovis* is rare and is consistent with experience from elsewhere [6]. Further reviews of this kind would give greater reassurance about lack of transmission to humans.

On the basis of the low probability of human infection, the chest clinic screening resources are now being locally targeted by only referring for follow up those people in contact with cattle with a higher risk of 'infectivity' to humans. To facilitate this, Veterinary Officers from the local SVS agreed to inform the CCDC about those herds where cattle have been

Table 1. *Heaf test results for the 138 people who attended the Stoke on Trent Chest Clinic or neighbouring health authorities clinics*

Heaf result	Number of people	Comments
0 or 1	77	
2	31	
3	5	Two had had previous BCG
4	0	
No Heaf test performed	15	
Uncertain result: not read by health visitor or results not available	10	

diagnosed as having tuberculosis and to give details of the post mortem lesions found in the animals. The CCDC is then able to refer for follow-up those people in contact with cattle with a higher risk of infectivity to humans. In addition children in close contact with all affected cattle will be referred for BCG.

An occasional joint meeting with public health physicians, chest physicians, tuberculosis health visitor, the SVS and environmental health officers was found to be helpful in ensuring a co-ordinated multi-agency response to the issue and enabling all agencies to be aware of the extent of the problem locally. The close working with the SVS has enabled the targeting of screening resources described.

Guidance on the follow up of human contacts of bovine tuberculosis has been recently published by the Department of Health [7].

ACKNOWLEDGEMENTS

We would like to thank Dr Paul Van Buynder from the Public Health Laboratory Service Communicable Disease Surveillance Centre for the information on the national situation in humans and for his comments on the paper.

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